*Nanotechnology Perceptions*
*ISSN 1660-6795*
*www.nano-ntp.com*

# Research on the Cultivation and Improvement Strategies of College Students' Employability Under the Background of Digital Economy in Shanxi, China

**Xinxing Li, Wasin Phromphithakkul**

*Faculty of Management, Shinawatra University, Thailand*
*Email: 15634970830@163.com*

This study delves into the current status, influencing factors, and enhancement strategies of college students' employment abilities against the backdrop of the digital economy. Through a mixed-methods approach combining quantitative and qualitative research, including questionnaires and in-depth interviews, the study collected and analyzed 384 valid data points, revealing the significant impact of the digital economy on college students' employment abilities. The research finds that, in the context of the digital economy, there is a notable increase in students' demand for Digital Skills Acquisition (DSA) and innovation capabilities, while effective Employment Ability Improvement (EAI) strategies can significantly enhance students' employment competitiveness.
**Keywords:** Digital Economy, College Students, Employment Ability, Digital Skills, Improvement Strategies.

## 1. Introduction

In the context of the current social and economic transformation and rapid technology development, the digital economy is gradually becoming an important force to promote economic growth and social development. As a key component of this change, the role of higher education institutions and their graduates is particularly prominent. Study the training and improvement strategies of college students' employment ability. It aims to cultivate high -quality talents that meet the needs of the digital economy by optimizing the education system to meet the urgent needs of talents in social and economic development. The rise of the digital economy has profoundly transformed traditional industries and spawned a plethora of new professional jobs, demanding higher technical skills, innovation abilities, and lifelong learning

capabilities from practitioners. This shift underscores the importance of integrating digital economy elements into university education to enhance students' employment competitiveness and facilitate the optimization and upgrading of the overall economic structure. The research background, as outlined in the study, encompasses several critical aspects. Firstly, the importance of the field is evident from the changing landscape of the employment market. The digital economy has not only altered daily lifestyles but also reshaped the job market, with emerging occupations such as data analysts, AI engineers, and e-commerce operations becoming increasingly prevalent. According to BOSS direct employment data, the demand for data analysts increased by 30% in 2022, highlighting the urgent need for data-driven decision-making skills (Wu & Tang, 2023). Similarly, the salary level of AI engineers is at the forefront, reflecting the shortage of talents in the AI field. Secondly, the status of research at home and abroad reveals a growing focus on how universities can integrate digital economic elements into education. In China, scholars have explored various aspects such as curriculum setting, teaching method reforms, and internship training platforms to cultivate compound talents. Internationally, developed countries like the US and UK have accumulated rich experience in digital economy training, continuously optimizing their higher education systems through special research projects and international cooperation (Romprasert & Trivedi, 2021).The employment market in the digital economy has undergone significant changes, including the rise of emerging occupations, shifts in skill requirements, cross-industry employment opportunities, the popularity of remote work, increased entrepreneurial opportunities, and changes in college employment guidance services. For instance, the number of remote work positions increased by over 50% year-on-year in 2022, attracting a large number of college graduates (Zhan et al., 2024). These changes require college students to continuously improve their digital skills to adapt and seize future employment opportunities. However, the status quo and challenge of college student employment capabilities reveal a differentiation trend. While some students excel in their professional skills, many face challenges such as skills mismatch with market demand, insufficient practical abilities, weak professional planning awareness, and lack of soft skills (Cai, 2023; Yu et al., 2022). These challenges underscore the importance and urgency of research on the cultivation and improvement strategies of college students' employment abilities in the digital economy context.

In conclusion, the research background highlights the transformative impact of the digital economy on the employment market and the need for universities to adapt their education systems accordingly. By integrating digital economy elements into education, universities can enhance students' employment competitiveness and contribute to the sustainable development of the digital economy era. This research is not only crucial for addressing current educational issues but also for grasping the future socio-economic development trend.

Research Questions

In the context of the digital economy, the cultivation and improvement of college students' employment capabilities are facing many challenges and opportunities. This study aims to explore how to effectively improve the employment ability of college students in this context and ensure that they can better adapt to the changing employment market. Specifically, this study focuses on the following core issues:

Q1：What is the current employment ability of college students? What is their performance

in digital skills, employment confidence, and career planning?

Q2：What are the new requirements of the digital economic background to the employment capabilities of college students?

Q3： Is the current courses design, support services and training programs in the training of colleges and universities meet the needs of the digital economy?

Q4：What are the main factors that affect the employment ability of colleges and universities? What is the relationship between these factors?

Q5：How to build an effective improvement strategy so that college students have stronger employment competitiveness in the context of the digital economy?

Research Objectives

1. To evaluate the current status of employment ability of college students: Analyze the current ability of college students in digital skills, employment confidence, and career planning, and identify the advantages and deficiencies.

2. To explore the impact of digital economy on employment capabilities: Study the key skills and literacy required by students in the context of the digital economy, and explore how these factors affect the employment preparation and adaptability of students.

3. To analyze the effectiveness of the existing education model: examine the existing education and support system of colleges and universities, including curriculum settings, occupational guidance, skills training, etc., and analyze its effectiveness in improving students' employment ability.

4. To identify the main factors affecting employability: Combined with data analysis, explore which internal or external factors have a significant impact on students' employability, and provide a scientific basis for subsequent strategy design.

5. To improve strategy: Based on the analysis results, design a specific employment ability improvement strategy for colleges and universities to help students better cope with the occupation challenges brought by the digital economy.

Conceptual framework

In order to explore the cultivation and improvement strategies of college students' employment ability in the context of digital economy, we need to clarify independent variables and cause variables in research. The independent variable refers to the factors or conditions actively applied in the study, and because the variables are the result indicators that have changed due to the influence of the independent variable. The independent variable is mainly Digital Economy Awareness and Engagement (DEA). Because variables are mainly Digital Skills Acquisition (DSA), Employment Ability Improvement (EAI), Employment Readiness and Confidence (ERC), School Education and Support (SES).

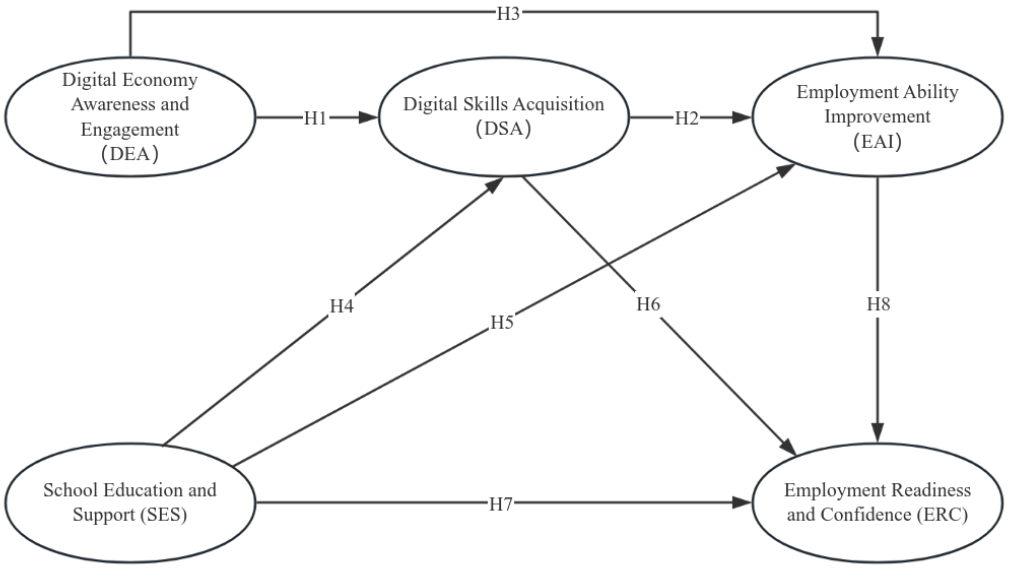


Figure 1.2 Research conceptual framework

Note. Original Research

## 2. Literature Review

The literature review, as a crucial component of academic research, provides a solid theoretical foundation and rich practical references for this paper. By systematically reviewing and analyzing the literature related to the employment ability of college students in the context of the digital economy, we can clearly see the research achievements and main viewpoints of predecessors in this field.

Firstly, the literature review points out that the digital economy has become an important engine driving global economic growth. It not only changes the operation modes of traditional industries but also spawns a large number of emerging professions, such as data analysts and AI engineers (Wu & Tang, 2023). These emerging professions place higher demands on practitioners' technical skills, innovative capabilities, and lifelong learning abilities (Cai, 2023). As the future workforce, the Employment Ability Improvement (EAI) of college students is particularly crucial. In the context of the digital economy, the constituents of college students' employment ability have received widespread attention. Employment ability encompasses not only professional knowledge and practical skills but also soft skills such as communication skills, team collaboration abilities, and innovation capabilities (Wei et al., 2022). Digital Skills Acquisition (DSA), especially in data analysis, programming, and digital tool application, has become an important part of employment ability (Yu et al., 2022). Mastering these skills is of great significance for students to adapt to digital work environments and enhance their employability. However, current college students' employment ability faces numerous challenges. On the one hand, there is a disconnection

between university curricula and market demands, resulting in students lacking necessary digital skills upon graduation (Li, 2023). On the other hand, students have insufficient practical opportunities and lack hands-on operation and project experience, affecting their competitiveness in the job market (Wei et al., 2022). Furthermore, the deficiency in soft skills, such as communication and team collaboration abilities, limits students' career development (Wei et al., 2022). To address these challenges, predecessors have proposed various strategies in the literature to enhance the Employment Ability Improvement (EAI) of college students. Optimizing the curriculum is widely regarded as an effective way to improve employment ability. By adding cutting-edge courses related to the digital economy, such as artificial intelligence and big data processing, students can keep abreast of the latest technological trends and applications (Zhang et al., 2024). Meanwhile, strengthening practical teaching is also a crucial means of enhancing employment ability. Through school-enterprise cooperation, internships, and practical training, students can obtain more practical opportunities to apply theoretical knowledge to actual work, thereby improving their problem-solving abilities (Yu et al., 2022). In addition, career planning guidance and mental health education play important roles in improving students' Employment Ability Improvement (EAI). Career planning guidance can help students clarify their career goals, formulate reasonable job search plans, and enhance their Employment Readiness and Confidence (ERC) (Liu et al., 2018). Mental health education, on the other hand, helps students establish positive self-perception, enhance psychological adjustment abilities, and better cope with the challenges and pressures in the job search process (Smith & Betz, 2000). In the context of the digital economy, the industry-education integration model has also received widespread attention. Through school-enterprise cooperation and industry-academia-research collaboration, universities and enterprises can jointly cultivate students' practical and innovative abilities (Wang & Zhang, 2019). The implementation of this model not only helps improve students' employment ability but also promotes the transformation and application of scientific and technological achievements, driving the innovative development of industries. It is worth noting that the impact of Digital Economy Awareness and Engagement (DEA) on students' employment ability cannot be ignored. The literature points out that Digital Economy Awareness and Engagement (DEA) can help students broaden their employment horizons, understand industry development trends, and seize opportunities in emerging professions (Zhao, 2018). At the same time, through actual engagement with the digital economy, students can more intuitively feel the charm and potential of the digital economy, thereby stimulating their interest and motivation to learn and apply digital technologies (Li & Wang, 2019).In terms of Digital Skills Acquisition (DSA), predecessors have also achieved fruitful research results. DeLoach and Higgins (2019) found through empirical research that students who master digital skills are more competitive in the job market. Nielsen (2017) analyzed the impact of digital skills on students' innovative abilities, pointing out that digital skills can stimulate students' innovative thinking and practical abilities. These research findings provide strong support for this paper to explore the role of Digital Skills Acquisition (DSA) in enhancing students' Employment Ability Improvement (EAI).

In summary, predecessors have made significant achievements in research on the Employment Ability Improvement (EAI) of college students in the context of the digital economy. These studies not only reveal the mechanisms through which the digital economy affects the job market and students' employment ability but also propose various effective improvement

strategies. Based on previous research, this paper will further explore the paths to enhance the Employment Ability Improvement (EAI) of college students in the context of the digital economy, aiming to provide beneficial references for higher education reform and student career development. Additionally, the importance of School Education and Support (SES) in facilitating this process is also emphasized, highlighting the need for comprehensive measures to address the challenges faced by students in the digital era.

## 3. Research Methodology

The goal of this study is to explore the current status of the employability of college students under the background of the digital economy, analyze the advantages and disadvantages of the existing training model, and propose improvement strategies to effectively improve the employability of college students. The study focuses on Digital Economy Awareness and Engagement (DEA), Digital Skills Acquisition (DSA), Employment Ability Improvement (EAI), School Education and Support (SES), Employment Readiness and Confidence (ERC) etc. By analyzing the influencing factors of each dimension, it provides colleges and universities with practical training programs to help students better adapt to workplace needs in the digital economy era. In this study, the main research subjects are college students. This study employed a mixed-methods approach, combining both quantitative and qualitative methodologies. The quantitative research component primarily utilized questionnaires. Firstly, 384 valid questionnaires were collected to explore the employment ability of college students in the context of the digital economy. Reliability and validity tests were conducted to ensure the data's reliability and scientific rigor. Secondly, statistical methods such as descriptive statistics, one-way ANOVA, correlation analysis, and others were employed to conduct an in-depth analysis of students' employment abilities across different ages, genders, and academic majors. Lastly, regression analysis and structural equation modeling were utilized to investigate the influence mechanisms of Digital Economy Awareness and Engagement (DEA), Digital Skills Acquisition (DSA), School Education and Support (SES), and other factors on Employment Readiness and Confidence (ERC), thereby providing a basis for enhancing students' Employment Ability Improvement (EAI). The qualitative research component involved in-depth interviews to gain a deeper understanding of their perspectives and suggestions regarding employment abilities in the digital economy context.

### 3.1 Population and Sample size

In this study, the main research subjects are college students. In order to explore the current situation of college students' employability and strategies to improve it under the background of digital economy, this study focuses on undergraduate and graduate students in colleges and universities in Shanxi. This group of people is representative because they are in a critical period of job preparation and career development and are directly affected by the rapid development of digital economy. Therefore, their performance in digital skills, employment confidence, career preparation, etc. has important reference value for this study.

In order to ensure the representativeness and reliability of the research results, this study adopted a stratified random sampling method, that is, first stratify according to school type (such as comprehensive, science and engineering, normal school, etc.), and then randomly

select a certain number of samples in each stratum. The determination of the sample size is based on the finite population sample size calculation formula proposed by Krejcie and Morgan (1970):

$$n = \frac{N \cdot z^2 \cdot p \cdot (1 - p)}{z^2 \cdot p \cdot (1 - p) + N \cdot e^2}$$

Among them,

n - represents the sample size,

N- represents the population size, zrepresents the standard normal distribution value corresponding to the confidence level,

p - represents the estimated proportion (usually 0.5 to obtain the maximum sample size),

e - indicates the allowable error. Considering that the total number of college students in Shanxi Province is about 600,000, the confidence level set in this study is 95% (corresponding to z value of 1.96), the allowable error is 5%, and the minimum sample size calculated by substituting into the formula is 384.

3.2 Reliability and Validity Test

Reliability Test

First, an overall reliability assessment was conducted on the questionnaire to understand the synergy of all questions. The results obtained by using the SPSS tool are as follows:

Table 1. Cronbach's alpha coefficient of the overall questionnaire

| Cronbach's Alpha | N of Items |
|---|---|
| 0.955 | 40 |

Note. Adapted from SPSS Software Result.

The Cronbach's alpha coefficient calculated by SPPS for all questions is 0.955. According to the reliability judgment rule, when the Cronbach's alpha coefficient is greater than 0.9, it means that the internal consistency of the scale questions in the questionnaire is good, that is, the reliability of the questionnaire is good, indicating that the questionnaire data of this survey is credible.

Validity Test

-According to the Criteria of IOC Test, initial questionnaire was checked by 5

experts respectively in the field of management and film and television to the questionnaires including: 1. Dr.Wasin Phromphithakkul(Management), 2. Dr.Yike Ren, 3. Dr.Guoqiang Sun

4. Asst. Prof. Dr. Li Hao, 5. Prof.Dr. Xun Li

These 5 experts gave score of "-1, 0, 1" to each question item and then calculated the IOC index of each expert's score. According to the results, question items with an IOC index less than 0.5 were modified, while question items with an IOC index greater than or equal to 0.5 were retained. This process was conducted repeatedly, and the question items were scored by

experts again until finally the results from IOC test for this initial questionnaire was more than 0.5 in sum (IOC Average 1.00) which met the previous standards, thus, the content validity of the questionnaire was good.

-The questionnaire was validated using SPSS software and the following results were obtained:

Table 2. Validity test results of the overall questionnaire

| | | |
|---|---|---|
| KMO sampling suitability measure | | 0.954 |
| Bartlett's test of sphericity | Approximate Chi-Square | 10558.131 |
| | Degrees of Freedom | 780 |
| | Significance | <001 |

Note. Adapted from SPSS Software Result. *Sig < 0.05, **Sig <0.01, ***Sig = .000

The KMO (Kaiser-Meyer-Olkin) sampling suitability measure is an indicator of whether factor analysis is suitable for a given data set. Its value range is between 0 and 1. The closer it is to 1, the more suitable the factor structure of the data set is for factor analysis. In this table, the KMO value is 0.954, which is greater than the threshold of 0.5 and close to 1, indicating that the variables in the questionnaire are highly correlated.

-Bartlett's sphericity test is an indicator to measure whether there is a correlation between variables in factor analysis. In this table, the approximate chi-square value of the sphericity test is 10558.131 , the degree of freedom is 780 , the significance level is 0.000 (< 0.001 ), the significance is less than 0.05 , and the questionnaire reliability test is passed, which means that there is a significant correlation between the variables , that is, the validity of the questionnaire is strong.

-The results of the questionnaire reliability and validity analysis showed that the reliability and validity of this questionnaire were good.

## 4. Data Analysis

Descriptive Analysis

Descriptive Analysis of Basic Demographic Information in the Questionnaire

Table 3. Number and composition ratio of each category of basic information of respondents

| variable | category | Number of people | Composition ratio |
|---|---|---|---|
| Age | | | |
| | 18-24 years old | 288 | 75% |
| | 25-29 years old | 74 | 19.3% |
| | 30 years and above | 22 | 5.7% |
| Gender | | | |
| | male | 185 | 48.2% |
| | female | 199 | 51.8% |

| | | | |
|---|---|---|---|
| Education | | | |
| | College | 143 | 37.2% |
| | Undergraduate | 152 | 39.6% |
| | Graduate students and above | 89 | 23.2% |
| Professional Direction | | | |
| | liberal arts | 153 | 39.8% |
| | Science and Engineering | 60 | 15.6% |
| | Economic Management | 69 | 18% |
| | Arts and Sports | 29 | 7.6% |
| | other | 73 | 19% |
| Employment status after graduation | | | |
| | Employment | 170 | 44.3% |
| | Unemployed | 54 | 14.1% |
| | Postgraduate study or other further studies | 72 | 18.8% |
| | Self-employment | 88 | 22.9% |

Note. Adapted from SPSS Software Result.

Interpretation: In this questionnaire survey, the age distribution of the respondents is mainly concentrated between 18 and 24 years old, accounting for 75%, or 288 people. The second is the 25-29 age group, accounting for 19.3%, corresponding to 74 people. The respondents aged 30 and above are the least, totaling 22 people, accounting for only 5.7%. In terms of gender distribution, there were 185 male respondents, accounting for 48.2% of the total number; there were 199 female respondents, accounting for 51.8%. The gender ratio is close to 1:1, which is basically balanced and slightly biased towards women. The educational level of the respondents is as follows: 143 people have junior college education, accounting for 37.2%; 152 people have bachelor's degree, accounting for 39.6%; 89 people have postgraduate education or above, accounting for 23.2%.In terms of professional orientation, there were 153 respondents majoring in liberal arts, accounting for 39.8%; 60 majoring in science and engineering, accounting for 15.6%; 69 majoring in economics and management, accounting for 18%; 29 majoring in art and sports, accounting for 7.6%; and 73 majoring in other categories, accounting for 19%. In terms of employment status after graduation, 170 respondents chose to work, accounting for 44.3%; 54 respondents were unemployed, accounting for 14.1%; 72 respondents took the postgraduate entrance examination or other further studies, accounting for 18.8%; and 88 respondents started their own businesses, accounting for 22.9%.

Univariate Analysis

The independent sample t-test is to calculate the t-value based on the difference between the sample means, the sample size and the sample standard deviation, and then determine whether the means of the two samples are significantly different. The larger the t-value, the more significant the difference between the means of the two samples. One-way ANOVA is a

hypothesis testing method used to compare whether the means of three or more samples are significantly different. The principle of one-way ANOVA is to calculate the F value based on the differences between groups and within groups, and then determine whether the means of each sample are significantly different.

Table 4 Univariate variance of age on each dimension

| variable | category | Mean ± SD | t /F | P |
|---|---|---|---|---|
| Digital Economy Awareness and Engagement dimensions | 18-24 years old | 3.2±0.81 | 5.447 | 0.005 |
| | 25-29 years old | 3.35±0.91 | | |
| | 30 years and above | 3.78±0.86 | | |
| Digital Skills Acquisition Dimension | 18-24 years old | 3.39±0.9 | 3.804 | 0.023 |
| | 25-29 years old | 3.64±0.89 | | |
| | 30 years and above | 3.78±0.98 | | |
| Employment Ability Improvement dimensions | 18-24 years old | 3.47±0.89 | 3.35 | 0.036 |
| | 25-29 years old | 3.48±0.9 | | |
| | 30 years and above | 3.98±0.86 | | |
| School Education and Support dimensions | 18-24 years old | 3.37±0.93 | 3.134 | 0.042 |
| | 25-29 years old | 3.5±0.93 | | |
| | 30 years and above | 3.75±0.99 | | |
| Employment Readiness and Confidence Dimensions | 18-24 years old | 3.41±0.82 | 2.484 | 0.048 |
| | 25-29 years old | 3.52±0.89 | | |
| | 30 years and above | 3.7±1.03 | | |

Note. Adapted from SPSS Software Result.

The ANOVA results show that there are significant differences and impacts among different age groups in terms of Digital Economy Awareness and Engagement (DEA), Digital Skills Acquisition (DSA), Employment Ability Improvement (EAI), School Education and Support (SES), and Employment Readiness and Confidence (ERC).As age increases, the mean scores of students in these dimensions show an upward trend, indicating that older students have higher evaluations in these areas.

Table 5 Independent sample t-test of gender on each dimension

| variable | category | Mean ± SD | t /F | P |
|---|---|---|---|---|
| Digital Economy Awareness and Engagement dimensions | male | 3.26±0.85 | 3.109 | 0.019 |
| | female | 3.27±0.84 | | |
| Digital Skills Acquisition Dimension | male | 3.45±0.9 | 3.11 | 0.019 |
| | female | 3.46±0.92 | | |

| | | | | |
|---|---|---|---|---|
| Employment Ability Improvement dimensions | male | 3.49±0.9 | 4.32 | 0.001 |
| | female | 3.52±0.89 | | |
| School Education and Support dimensions | male | 3.43±0.94 | 3.392 | 0.017 |
| | female | 3.4±0.93 | | |
| Employment Readiness and Confidence Dimensions | male | 3.43±0.86 | 2.38 | 0.037 |
| | female | 3.46±0.85 | | |

Note. Adapted from SPSS Software Result.

In summary, the independent sample t-test analysis reveals that gender significantly influences all five dimensions: Digital Economy Awareness and Engagement, Digital Skills Acquisition, Employment Ability Improvement, School Education and Support, and Employment Readiness and Confidence. Female students perform slightly better in employment ability improvement, employment readiness, and confidence, demonstrating strengths in soft skills like communication and collaboration, while male students show greater enthusiasm in digital economy awareness and engagement as well as utilizing school educational support.

Table 6 Single factor variance values of education level on each dimension

| variable | category | Mean ± SD | t /F | P |
|---|---|---|---|---|
| Digital Economy Awareness and Engagement dimensions | College | 3.27±0.83 | 3.19 | 0.018 |
| | Undergraduate | 3.24±0.84 | | |
| | Graduate students and above | 3.3±0.88 | | |
| Digital Skills Acquisition Dimension | College | 3.41±0.89 | 3.406 | 0.017 |
| | Undergraduate | 3.46±0.89 | | |
| | Graduate students and above | 3.53±0.98 | | |
| Employment Ability Improvement dimensions | College | 3.41±0.87 | 4.784 | 0 |
| | Undergraduate | 3.51±0.88 | | |
| | Graduate students and above | 3.63±0.96 | | |
| School Education and Support dimensions | College | 3.37±0.93 | 3.504 | 0.016 |
| | Undergraduate | 3.41±0.95 | | |
| | Graduate students and above | 3.5±0.93 | | |
| Employment Readiness and Confidence Dimensions | College | 3.35±0.86 | 4.813 | 0 |
| | Undergraduate | 3.47±0.85 | | |
| | Graduate students and above | 3.57±0.83 | | |

Note. Adapted from SPSS Software Result.

Through the one-way ANOVA of students of different educational levels across various dimensions, the following conclusions can be drawn: educational level has a significant impact on all five dimensions: Digital Economy Awareness and Engagement, Digital Skills Acquisition, Employment Ability Improvement, School Education and Support, and Employment Readiness and Confidence. As educational level increases, students' scores in these dimensions gradually rise, indicating that higher-educated students have certain advantages in digital economy knowledge, digital skills, employment ability, educational resource utilization, and career confidence.

Table 7 Single factor variance values of majors on each dimension

| variable | category | Mean ± SD | t /F | P |
|---|---|---|---|---|
| Digital Economy Awareness and Engagement dimensions | liberal arts | 3.24±0.84 | 3.32 | 0.019 |
| | Science and Engineering | 3.33±0.83 | | |
| | Economic Management | 3.27±0.86 | | |
| | Arts and Sports | 3.38±0.86 | | |
| | other | 3.22±0.87 | | |
| Digital Skills Acquisition Dimension | liberal arts | 3.37±0.87 | 3.631 | 0.016 |
| | Science and Engineering | 3.53±0.94 | | |
| | Economic Management | 3.52±0.94 | | |
| | Arts and Sports | 3.55±0.93 | | |
| | other | 3.49±0.95 | | |
| Employment Ability Improvement dimensions | liberal arts | 3.43±0.85 | 3.818 | 0.015 |
| | Science and Engineering | 3.6±0.96 | | |
| | Economic Management | 3.47±0.9 | | |
| | Arts and Sports | 3.71±1 | | |
| | other | 3.52±0.88 | | |
| School Education and Support dimensions | liberal arts | 3.31±0.95 | 2.953 | 0.024 |
| | Science and Engineering | 3.47±0.91 | | |
| | Economic Management | 3.43±0.97 | | |
| | Arts and Sports | 3.62±0.93 | | |
| | other | 3.48±0.89 | | |
| Employment Readiness and Confidence Dimensions | liberal arts | 3.38±0.83 | 2.537 | 0.027 |

| | | |
|---|---|---|
| | Science and Engineering | 3.53±0.77 |
| | Economic Management | 3.52±0.92 |
| | Arts and Sports | 3.5±0.73 |
| | other | 3.45±0.94 |

Note. Adapted from SPSS Software Result.

Through the one-way ANOVA of students from different majors in various dimensions, the following conclusions are drawn: Firstly, major direction has a significant impact on the five dimensions of Digital Economy Awareness and Engagement (DEA), Digital Skills Acquisition (DSA), Employment Ability Improvement (EAI), School Education and Support (SES), and Employment Readiness and Confidence (ERC). Specifically, science and engineering, as well as arts and sports students, score higher in dimensions such as DEA, DSA, and EAI, while liberal arts students score relatively lower in these dimensions, reflecting the varying employment ability characteristics of different majors in the context of the digital economy. Secondly, science and engineering students score higher in DSA, EAI, and ERC, demonstrating their stronger technical advantages and employment competitiveness. The relatively lower scores of liberal arts students in these areas suggest that universities need to provide more support for digital skills and employment preparation in liberal arts majors.

Table 8 Single factor variance values of employment status after graduation on each dimension

| variable | category | Mean ± SD | t /F | P |
|---|---|---|---|---|
| Digital Economy Awareness and Engagement dimensions | Employment | 3.25±0.83 | 2.291 | 0.028 |
| | Unemployed | 3.36±0.89 | | |
| | Postgraduate study or other further studies | 3.24±0.88 | | |
| | Self-employment | 3.25±0.81 | | |
| Digital Skills Acquisition Dimension | Employment | 3.44±0.91 | 3.172 | 0.019 |
| | Unemployed | 3.5±0.89 | | |
| | Postgraduate study or other further studies | 3.41±0.93 | | |
| | Self-employment | 3.5±0.92 | | |
| Employment Ability Improvement dimensions | Employment | 3.45±0.86 | 5.203 | 0 |
| | Unemployed | 3.65±0.93 | | |
| | Postgraduate study or other further studies | 3.42±0.91 | | |
| | Self-employment | 3.59±0.91 | | |
| School Education and Support dimensions | Employment | 3.36±0.94 | 2.435 | 0.027 |
| | Unemployed | 3.48±0.99 | | |

| | | | | |
|---|---|---|---|---|
| | Postgraduate study or other further studies | 3.49±0.91 | | |
| | Self-employment | 3.4±0.92 | | |
| Employment Readiness and Confidence Dimensions | Employment | 3.46±0.86 | 3.281 | 0.018 |
| | Unemployed | 3.39±0.9 | | |
| | Postgraduate study or other further studies | 3.4±0.84 | | |
| | Self-employment | 3.5±0.83 | | |

Note. Adapted from SPSS Software Result.

Through one-way ANOVA analysis of students with different post-graduation employment statuses across various dimensions, the following conclusions are drawn: Firstly, different employment statuses significantly impact DEA, DSA, EAI, SES, and ERC. Unemployed and self-employed students score higher in DSA and EAI, while students pursuing further studies score higher in SES, indicating varying focal points of needs among students with different employment statuses. Secondly, employed and self-employed students score higher in ERC, reflecting the positive effect of actual work and entrepreneurial experience on enhancing students' career confidence. Unemployed students score slightly higher in DEA and SES, showing their resource and knowledge needs during job searching. Thirdly, students pursuing further studies score relatively lower in DSA and EAI, suggesting that universities should help these students balance academic enhancement with vocational skills and employment preparation to strengthen their overall competitiveness.

Correlation Analysis

Correlation analysis is a statistical method used to study the relationship between two variables. Next, the correlation between the various dimensions was analyzed by Pearson correlation analysis of the questionnaire data using SPSS software, and the following results were obtained:

Table 9 Correlation between various dimensions

| variable | x1 | x2 | x3 | x4 | x5 |
|---|---|---|---|---|---|
| x 1 | 1 | | | | |
| x2 | .599 | 1 | | | |
| x3 | .574 | .712 | 1 | | |
| x4 | .609 | .634 | .721 | 1 | |
| x5 | .518 | .533 | .493 | .531 | 1 |

Note. Adapted from SPSS Software Result.

. The correlation is significant at the 0.01 level (two-tailed).

*. The correlation is significant at the 0.05 level (two-tailed) .

The description of each symbol is shown in the following table:

x1-Digital Economy Awareness and Engagement dimensions

x2-Digital Skills Acquisition Dimension

x3-Employment Ability Improvement dimensions

x4-School Education and Support dimensions

x5-Employment Readiness and Confidence Dimensions

Through the above correlation analysis, the following conclusions can be drawn:Firstly, there are significant positive correlations among all five dimensions, indicating that DEA, DSA, EAI, SES, and ERC are mutually reinforcing. The combined effect of these dimensions can effectively enhance students' employment abilities in the context of the digital economy.

Regression Analysis

Regression analysis is a statistical method used to study the relationship between variables.A regression analysis was conducted with Employment Readiness and Confidence (ERC) as the dependent variable, and the following four dimensions as independent variables: Digital Economy Awareness and Engagement (DEA), Digital Skills Acquisition (DSA), Employment Ability Improvement (EAI), and School Education and Support (SES). The regression analysis results are presented in the table below:

Table 10 Regression analysis results

| variable | B | S.E | Beta | t | p |
|---|---|---|---|---|---|
| (constant) | 1.146 | 0.159 | | 7.211 | 0 |
| Digital Economy Awareness and Engagement dimensions | 0.224 | 0.055 | 0.222 | 4.051 | 0 |
| Digital Skills Acquisition Dimension | 0.216 | 0.058 | 0.23 | 3.714 | 0 |
| Employment Ability Improvement dimensions | 0.043 | 0.064 | 0.045 | 0.667 | 0.505 |
| School Education and Support dimensions | 0.198 | 0.058 | 0.217 | 3.444 | 0.001 |

Note. Adapted from SPSS Software Result. $R = 0.613$ ,$R^2 = 0.375$, $F=56.892$, $p < 0.001$

Structural equation model

Structural Equation Modeling (SEM) is a statistical technique that combines causal analysis with multivariate statistical analysis to explore the complex relationships between multiple variables.

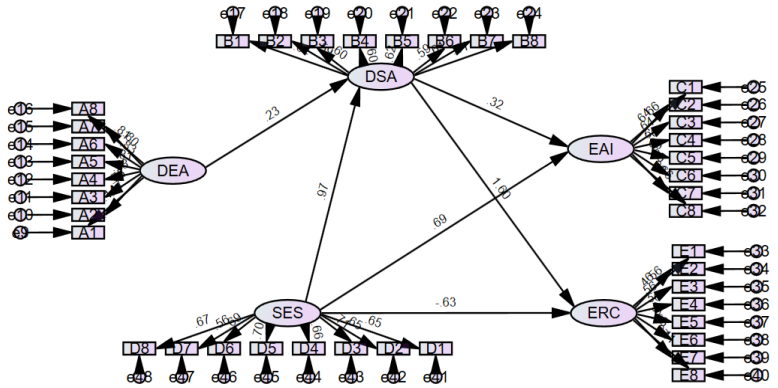


Figure 1 Structural equation model

Note. Adapted from Amos Software

From the overall model, Digital Economy Awareness and Engagement (DEA), Digital Skills Acquisition (DSA), and School Education and Support (SES) influence students' Employment Readiness and Confidence (ERC) through direct or indirect paths. The path relationships in the model clearly demonstrate the key factors and mechanisms affecting the Employment Ability Improvement (EAI) of college students in the context of the digital economy. The following is a further summary of the critical findings in the model: The Importance of Digital Economy Awareness: DEA serves as a foundational condition for enhancing students' digital skills. Understanding and engaging with digital economy content stimulates students' interest in and commitment to digital skills, fostering significant development in their technical abilities. When improving students' employment abilities, colleges and universities should prioritize the popularization of digital economy education, offering rich coursework and practical training programs to help students establish a solid foundation in the digital economy. The Crucial Role of School Support: SES plays a vital role in enhancing students' DSA and ERC. Investments in curriculum design, skills training, resource provision, and psychological support provide students with comprehensive assistance, preparing them adequately for the workforce. It is recommended that colleges and universities, when designing their curriculum systems, not only focus on theoretical knowledge transmission but also strengthen practical digital skills training to ensure students are highly competitive in the digital economy. The Complex Impact of Digital Skills on Employment Confidence: The model reveals that DSA has both positive and potential negative effects on employment confidence. This indicates that while digital skills are crucial for employment competitiveness, the difficulty in mastering these skills can increase students' employment pressure. This finding suggests that colleges and universities should pay attention to students' psychological needs in teaching, avoiding excessive requirements that could undermine their self-confidence during job seeking.

Thematic Analysis

Through in-depth interviews, this study found significant differences among interviewees in terms of digital economy awareness (DEA), digital skills acquisition (DSA), employment ability improvement (EAI), school education and support (SES), and employment readiness and confidence (ERC). To enhance the employability of college students, it is recommended

that schools strengthen the teaching and practice of digital economy-related courses, optimize course offerings, increase practical opportunities, and strengthen career planning and employment guidance services to help students better understand the job market and formulate appropriate career plans. Additionally, students should be encouraged to actively participate in teamwork and project practices to enhance innovative thinking, team collaboration, and communication skills.

## 5. Conclusions

Q1: Employability Level: The overall employability of college students in the context of the digital economy is above average, but there is still room for improvement. Specifically, they have shown enhancements in innovative thinking, teamwork, and market adaptability, yet there are variations in self-directed learning, communication skills, and problem-solving abilities. Digital Skills Acquisition (DSA): Most students are at an above-average level in DSA, with some proficient in basic data analysis and tool usage. However, there is a need for improvement in programming and advanced data analysis skills. Employment Confidence: Students' confidence in their future employment prospects is generally moderate. While some are optimistic about their career abilities and prospects, many lack confidence due to inadequate skills or uncertainties in the job market. Career Planning: Some students have clear career plans and are working towards them, but many feel uncertain about their career directions and lack clear planning.

Q2: Digital Economy Awareness and Engagement (DEA): Students need a deep understanding of the concept and importance of the digital economy, as well as its impact on future societal development. Digital Skills Acquisition (DSA): Students must master core digital skills such as data analysis, programming, and digital tool usage to adapt to digital work environments. Innovative Ability: In the context of the digital economy, students need to possess innovative thinking and creativity to flexibly respond to market changes and technological iterations. Team Collaboration and Communication: With the increasing prevalence of remote work and digital collaboration, students' teamwork and communication skills are particularly important. Continuous Learning: Given the rapid development of the digital economy, students need to have the ability and awareness to continuously learn, constantly updating their knowledge and skills.

Q3: Curriculum Design: Some universities have made progress in digital economy-related courses, but overall, they are still inadequate. The content and updating speed of the courses have not fully kept pace with the development of the digital economy. School Education and Support (SES): Universities provide some support in career guidance and planning, but there is still room for improvement in the provision of digital economy educational resources and psychological counseling. Practical Training Projects: The practical opportunities and projects provided by universities have helped students improve their practical abilities to some extent, but the quantity and quality are still not entirely sufficient to meet students' needs in the digital economy context.

Q4: Main Factors: They include Digital Economy Awareness and Engagement (DEA), Digital Skills Acquisition (DSA), School Education and Support (SES), and Employment Readiness

and Confidence (ERC).Relationships: Through correlation analysis and structural equation modeling, it is found that DEA is significantly positively correlated with DSA, DSA is significantly positively correlated with Employment Ability Improvement (EAI), and SES has a positive impact on both DSA and EAI. These factors jointly influence students' ERC. DEA serves as the foundation, DSA is key, and SES is the guarantee, collectively promoting students' EAI and enhancing their employment confidence.

Q5: Strengthen Digital Economy Education: Integrate digital economy into the core curriculum system, popularize basic knowledge of the digital economy, and enhance students' DEA. Reinforce DSA: Provide multi-level DSA courses and training opportunities, using project-based learning, skill competitions, and other means to help students improve their digital skill levels. Optimize Career Support Systems: Establish and improve services such as career planning guidance, employment guidance, and psychological counseling to help students clarify their career directions and enhance their employment confidence. Increase Practical Opportunities: Collaborate with enterprises to offer internship programs, school-enterprise cooperation courses, etc., providing students with more practical opportunities to enhance their hands-on abilities and workplace adaptability. Attend to Students' Psychological Needs: Pay attention to students' psychological needs during skill teaching and career guidance, providing necessary psychological counseling and support to help them overcome anxiety and build confidence. Implement Comprehensive Measures: Take comprehensive measures from multiple dimensions, including DEA, DSA, and SES, to create synergies and comprehensively enhance students' employability and competitiveness.

## References

1.Cai, S. (2023). Digital economy background and the path of talent training for new business majors in higher vocational education. University, (1), 5-10.
2.DeLoach, S. B., & Higgins, C. A. (2019). The role of digital skills in career advancement: An exploratory study. Journal of Vocational Behavior, 110, 148-158.
3.Li, S. (2023). Reform of innovation and entrepreneurship ability cultivation system for undergraduates in the context of economic transformation and new engineering. Applied Mathematics and Nonlinear Sciences., 8(1), 411-426.
4.Liu, Y., Li, M., & Chen, X. (2018). The influence of career planning education on students' employability. China Higher Education Research, (7), 90-94.
5.Li, M., & Wang, L. (2019). An empirical study on the relationship between college students' employment preparation and employment confidence. Education & Vocation, (23), 78-83.
6.Nielsen, N. W. (2017). Digital competence in the workplace: An exploratory study. Computers in Human Behavior, 77, 346-354.
7.Romprasert, S., & Trivedi, A. (2021). Sustainable economy on community enterprise and digital marketing. ABAC Journal.
8.Smith, N. A., & Betz, N. E. (2000). Development and validation of a new scale for measuring career decision-making self-efficacy. Journal of Counseling Psychology, 47(1), 55-67.
9.Wu, J., & Tang, J. (2023). Research on the strategies for cultivating college students' digital innovation abilities in the context of the digital intelligence era. Education Quarterly Reviews.
10.Wei, C., Jiao, Z., & Hu, W. (2022). Research on improving the employability and employment quality of college students under the new situation. Employment and Security, (1), 34-36.
11Wang, H., & Zhang, M. (2019). Enhancing students' employability through industry-education

integration: A case study in China. International Journal of Educational Development, 69, 100983.
12. Yu, R., Fan, W., Su, H., Zhu, P., & Liu, S. (2022). Research on the strategies for improving college students' employment ability from the perspective of supply and demand. The Way to Success.
13. Zhan, H., Cheng, K. M., Wijaya, L., & Zhang, S. (2024). Investigating the mediating role of self-efficacy between digital leadership capability, intercultural competence, and employability among working undergraduates. Education, Skills and Work.
14. Zhang, S., Yang, J., Shen, Y., & Li, Z. (2024). How do digital capabilities impact the sustained growth of entrepreneurial income: Evidence from Chinese farmer entrepreneurs. Sustainability.
15. Zhao, L. (2018). Innovation and practice of college talent training mode in the digital economy era. China Higher Education Research, (12), 67-70.