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The Impact of Learning Outcomes and Career Guidance on Employability Skills in Chinese Vocational Graduates

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Abstract

This study investigates the impact of learning outcomes and career guidance on the employability skills of Chinese vocational college graduates specializing in cross-border e-commerce. The research was motivated by the existing mismatch between graduates' skills and labor market demands, exacerbated by technological advancements and globalization. While previous studies have explored the direct effects of learning outcomes and career guidance on employability skills, there was a gap in understanding the mediating role of career guidance in this context. This study aims to address this gap by examining the influence of learning outcomes on employability skills and evaluating the role of career guidance as a mediator. Employing a quantitative approach, 280 valid questionnaires were analyzed using SPSS and PLS-SEM to assess the relationships between these constructs. The findings confirmed a significant positive relationship between learning outcomes and employability skills, with career guidance acting as a crucial mediator. The study suggested that vocational colleges should prioritize the development of clear, industry-aligned learning outcomes and invest in comprehensive career guidance services to enhance graduate employability skills in the competitive e-commerce sector. By aligning educational programs with labor market demands, policymakers can ensure that graduates are well-prepared for the workforce, thereby fostering sustainable development in China's vocational education system.

Keywords: *Learning outcomes*, *career guidance, employability skills, vocational college graduates, PLS-SEM*

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Kesan Hasil Pembelajaran dan Bimbingan Kerjaya Terhadap Kemahiran Kebolehpasaran dalam Kalangan Graduan Vokasional di China

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Abstrak

Kajian ini dijalankan bagi mengkaji kesan hasil pembelajaran dan bimbingan kerjaya terhadap kemahiran kebolehpasaran graduan kolej vokasional di China yang menumpukan kepada pengkhususan e-dagang rentas sempadan. Penyelidikan ini digerakkan oleh ketidakpadanan sedia ada antara kemahiran graduan dan keperluan pasaran buruh, yang semakin ketara akibat kemajuan teknologi dan globalisasi. Walaupun kajian lepas telah meneroka kesan langsung hasil pembelajaran dan bimbingan kerjaya terhadap kemahiran kebolehpasaran, masih terdapat jurang dalam memahami peranan bimbingan kerjaya sebagai pemboleh ubah pengantara dalam konteks ini. Kajian ini bertujuan menangani jurang tersebut dengan meneliti pengaruh hasil pembelajaran terhadap kemahiran kebolehpasaran serta menilai peranan bimbingan kerjaya sebagai pengantara. Dengan menggunakan pendekatan kuantitatif, sebanyak 280 soal selidik yang sah telah dianalisis menggunakan SPSS dan PLS-SEM bagi menilai hubungan antara konstruk-konstruk ini. Dapatan kajian mengesahkan wujudnya hubungan positif yang signifikan antara hasil pembelajaran dan kemahiran kebolehpasaran, dengan bimbingan kerjaya berperanan penting sebagai pengantara. Kajian ini mencadangkan agar kolej vokasional memberi keutamaan kepada pembangunan hasil pembelajaran yang jelas serta sejajar dengan industri, di samping melabur dalam perkhidmatan bimbingan kerjaya yang menyeluruh untuk meningkatkan kemahiran kebolehpasaran graduan dalam sektor e-dagang yang kompetitif. Penyelarasan program pendidikan dengan keperluan pasaran buruh, pembuat dasar dapat memastikan graduan lebih bersedia untuk memasuki alam pekerjaan, sekali gus menyokong pembangunan mampan dalam sistem pendidikan vokasional China.

Kata kunci: Hasil pembelajaran, bimbingan kerjaya, kemahiran kebolehpasaran, graduan kolej vokasional, PLS-SEM

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1. Introduction

Existing research identified a disparity between labor market demands and the educational preparedness of graduates, which impeded the sustainable development of China's vocational education system (Ahmadu et al., 2022). Also, recent studies indicated that graduates frequently lacked the employability skills required by companies, a situation intensified by the swift progress in information technology and globalization (Triyono et al., 2023). The increasing demand for skilled professionals in the labor market has placed greater emphasis on vocational education as a key pathway for developing employable graduates (Tushar & Sooraksa, 2023). In addition, the advancement of artificial intelligence has fundamentally transformed job requirements, necessitating the evolution of educational material and curricula. These changes required a transformation in educational methodologies and a comprehensive reorganization of educational material to meet the evolving demands of the job market.

In China, vocational colleges are pivotal in equipping students with the necessary skills to meet the industry requirements (Wang & Wang, 2024). Li and Rohayati (2024) stated that the learning outcomes of graduates got in vocational college played a significant role in enhancing employability skills. Dacre-Pool (2020) also elaborated that the graduates were expected to exit their studies in work-ready model and with demonstrable levels of employability. While, a mismatch existed between graduates' skills and employer expectations, highlighting the need for a deeper understanding of the factors influencing employability skills. The role of career guidance was important in promoting graduates' employability skills (Shuma & Basela, 2021). While, it was found to be inadequate and not formalized thereby threatening students' acquisition of employability skills. And Zhao (2023) also suggested that how the career guidance assisted the graduates' employability skills and met the demands of today's employment needs more study.

While previous studies have examined the individual and direct effects of learning outcomes and career guidance on employability skills, there is a need for research that specifically investigates the mediating role of career guidance in the relationship between learning outcomes and employability skills among Chinese vocational college graduates specializing in cross-border e-commerce. This study aims to fill this gap by providing empirical evidence on this relationship within this specific context. This study investigates the direct and mediated relationships between learning outcomes, career guidance, and employability skills. It aims to examine the influence of learning outcomes on employability skills and assess the mediating role of career guidance in this relationship. Specifically, the study seeks to determine the extent to which learning outcomes influence the employability skills of cross-border e-commerce graduates and whether career guidance serves as a mediator in this connection.

2. Literature Review and Hypothesis Development

2.1 Definitions

Learning Outcomes: Many universities have acknowledged that learning outcomes serve as a universal metric to harmonize the varied demands of stakeholders (Bennett et al., 2020). Learning outcomes encompass both subject-specific and generic skills that students can exhibit as a result of their participation in a course of study (Choi-Lundberg et al., 2024). In this study, learning outcomes were measured through items assessing the exogenous variables as academic performance, e-literacy, and generic skills (e.g., adaptability, leadership).

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Career Guidance: Career guidance was first started in 1915 in China. Then it went through several stages in Chinese social development (Liu, 2023). Career guidance included not only career selection guidance, but also employment preparation, employment guidance, career change guidance, service guidance, as well as guidance on subject selection and school selection in the process of career-oriented study (Guo et al., 2024). In this study, career guidance referred to the career guidance counselling service which was provided by the vocational college in order to improve the vocational college graduates' employability skills. It guided the students to prepare their CVs and write job applications. It was assessed through questions on the availability, quality, and perceived impact of career counseling services.

Employability Skills: Various definitions of employability have been proposed. Some scholars have framed employability skills as the capacity to acquire or sustain employment (Arif & Mir, 2023). Daud et al. (2021) found that the key employability skills needed by employers are basic academic skills, higher-order thinking skills, technical skills, and general employability skills like communication, problem-solving, and critical thinking. In this study, vocational graduates employability skills may be influenced by their learning outcomes in colleges. Specifically, the researcher examines employability skills through three main constructs: the academic skills, personal management skills and teamwork skills.

2.2 Learning Outcomes and Employability Skills

The impact of learning environments and educational technologies on student learning outcomes across various educational levels. Research indicated that different learning environments, including blended and innovative spaces, can influence academic outcomes in different schools (Olivares et al., 2020). Professional courses in university developed multiple competencies, including experimental skills, disciplinary learning, and higher-order thinking (Agustian et al., 2022). Additionally, in vocational education, the integration of educational technology has shown potential to enhance student engagement, knowledge retention, and higher-order thinking skills, though effectiveness varied based on implementation and context (Nassereddine & Nassreddine, 2024). These findings underscored the importance of thoughtful implementation and ongoing support to maximize the learning outcomes in different level of education and learning environments.

Learning outcomes, encompassing academic performance, e-literacy, and generic skills, were critical predictors of employability. Disciplinary knowledge provided domain-specific expertise, while generic skills, including communication, adaptability, and problem-solving, were essential for navigating diverse workplace environments (Zhang et al., 2023). Recent studies emphasized that a holistic approach to learning outcomes can bridge the skill gap and improve workforce readiness. Four categories impacted the relationship between employability and indicators of employability: individual factors, individual circumstances, enabling support system, and labor market (Behle, 2020). Innovative learning spaces and active learning strategies can contribute to improved student learning outcomes and the development of 21st-century employability skills (Pianda et al., 2025). Project-based learning, in particular, has been found to enhance communication, collaboration, critical thinking, problem-solving, and self-awareness skills, which were crucial for workplace success (Rahman et al., 2023). Overall, integrating career development, innovative learning, and practical approaches in vocational education enhances students' employability and workforce readiness.

H1: Learning outcomes are significantly related to employability skills.

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2.3 Career Guidance as a Mediator

In recent years, career guidance played a pivotal role in shaping students' career trajectories by aligning their skills and aspirations with labor market demands. It has been identified as both a direct and indirect influence on employability skills outcomes, enhancing students' understanding of career pathways and fostering confidence in their abilities (Botha et al., 2023). Career guidance services have gained increasing prominence and currently better facilitated across many universities worldwide (Ritonga & Wangid, 2022). (Okolie et al., 2020) argued that university career counselors were responsible for articulating the significance of career self-management and personal adaptability in order to maintain and improve employability skills. Following a gradual start, more and more researchers in China have now shifted their focus towards localizing the career guidance theories and strategies to aim to align with the diverse employment market more precisely and enhancing the graduates employability skills (Liu & Lai, 2023). Haxhihyseni (2021)'s research revealed inefficiencies for graduates employability skills in the provided career guidance, indicating a necessity to devise alternative, applicable strategies. Meanwhile, Du (2021) stated that the career guidance in college effectively enhanced the professional stability of newly employed college graduates, significantly reducing their turnover behavior. Yuan (2023) also supported that career guidance played an important role in promoting the employability skills of college graduates. Therefore, the study tests the following hypothesis:

H2: *Learning outcomes has a significant impact on employability skills, mediated by career guidance.*

2.4 Human Capital Theory

This study was grounded in the human capital theory, which posited that investments in education and skills development enhanced employability. Based on Becker (1994), human capital referred to the intangible economic worth of an individual's expertise and abilities. This encompassed elements like education, training, intelligence, skills, health, as well as attributes highly regarded by employers such as loyalty and punctuality. He also identified a strong connection between human capital and employment. And he emphasized that human capital was linked to investments in education, which enhance job experience and skills, leading to increased productivity in the labor market. Furthermore, Yuqiu (2024) carried out a survey and the findings indicated that the academic accomplishments of graduates exerted a substantial and positive influence on their employment outcomes.

According to the theory of human capital, the more human capital an individual accumulated in a vocational college, the higher his or her income and the better development prospects will be in his or her future career, in short, the higher employability skills they can get (Chang et al., 2022). The proposed model integrated learning outcomes, career guidance, and employability skills, exploring their interrelationships through SPSS and PLS-SEM.

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3.0 Research Methodology

3.1 Research Design

This study employed a quantitative approach to investigate how the learning outcomes contribute to the graduates' employability skills and evaluate the mediating role of career guidance in the relationship between learning outcomes and graduate's employability skills. This approach was particularly useful for assessing the impact of learning outcomes on the employability skills to reflect and evaluate the current status of teaching and learning in vocational college by an online questionnaire survey, as it was convenient to get the data.

3.2 Instrument Design and Development

The questionnaire was adapted from previous studies. It was chosen because it was most related to this study. There were two main sections in the questionnaire. The first section included demographic inquiries,such as, gender, graduation year, the employment status, etc. The second section featured three variables with 40 measurement items. Each item was rated on a 5-point Likert scale, ranging from 1(strongly disagree) to 5(strongly agree). For learning outcomes, 24 items were adapted from Dacre Pool et al. (2014) and Scoupe et al. (2023); for career guidance, six items were adapted from Pitan (2016); for employaiblity skills, 10 items were adapted from Jiang (2023) and Mainga et al. (2022).

The Cronbach's alpha for all scale items exceeded 0.70 (Bonett & Wright, 2015), signifying internal consistency among the measurement items. The results of this test showed that all the Cronbach's alpha were over 0.85. It meant a good internal consistency (Cronbach, 1975). The researcher has invited three vocational education experts to validate the relevance and accuracy of the measurement items in the survey. The researcher adjusted it following the suggestions from the experts.

3.3 Respondents and Data Collection

This study surveyed 300 vocational college graduates from the cross-border e-commerce industry in five provinces in China. Specially, the researcher chose the graduates who were new graduated in 1 to 3 years. For these employees, they got employment based more on their learning outcomes in vocational college, not on their work experience. Respondents provided data on their perceived learning outcomes, career guidance experiences, and employability skills.

The researcher created the link of the questionnaire on "Wenjuanxing" platform (https://www.wjx.cn/), which was one of the most popular survey businesses in China. The questionnaire was distributed through three most popular social media platforms in China, i.e., WeChat, Weibo and QQ, as these platforms are convenient for the respondents. It took about 4 weeks to collect the data. A sample of 300 graduates was selected using convenience sampling. Of the 300 questionnaires distributed, 297 were returned, with 280 deemed valid for analysis.

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3.4 Data Analysis

The Statistical Package for the Social Sciences (SPSS) 26. was employed to depict the profiles of the respondents. PLS-SEM 3.2.9 was employed to test the hypothesized relationships. The structural equation modeling (SEM) analysis was performed to investigate both the measurement and structural models. Specifically, reliability and validity were assessed using Cronbach's alpha and composite reliability. It also provided the values of factor loading, composite reliability (CR), and average variance extracted (AVE). Path coefficients and R^2 values were analyzed to evaluate the model's explanatory power. Finally, the bootstrapping method was employed to evaluate the statistical significance of the direct and mediating effects within the proposed hypothesis.

4.0 Findings

4.1 Descriptive Statistics

For the respondents' demographics, the data included gender, year of graduation, province, rank of certificate, time taken to find employment, current employment status, and position of present work. Within its regional setting, this study recognized the two recognized categories. Due to the predominance of Chinese culture, recognition was restricted to men and women. The result indicated that 44.5% of the respondents were male, whereas 55.5% were female. The study looked at four different respondent groups, with ages ranging from one to more than three years. The result indicated that most respondents graduated within the past one to two years. The place of graduated vocational college was showed that five provinces were balanced. In addition, this test revealed that a majority of the respondents secured employment within six months after graduation, nearly half of the respondents were employed full-time, while a smaller proportion pursued further studies or were unemployed, and over half of the respondents were working as junior staffers.

Table 1. presented the descriptive statistics for the study variables. The results indicated that all variables were measured on a scale where higher values reflect more positive perceptions. The mean score for learning outcomes (M = 3.5389, SD = 0.98387) was slightly higher than those for career guidance (M = 3.3427, SD = 1.12273) and employability skills (M = 3.3099, SD = 1.10390). The standard deviations suggested greater variability in responses for career guidance and employability skills compared to learning outcomes.

Table 1: The descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Learning_Outcomes	280	1.61	4.96	3.5389	.98387
Career_Guidance	280	1.17	5.00	3.3427	1.12273
Employability_Skills	280	1.40	4.90	3.3099	1.10390
Valid N (listwise)	280				

4.2 Measurement Model Assessment

In this study, the measurement model was assessed for reliability and validity to ensure the robustness of the constructs. Originally, the internal consistency of the items was assessed using Cronbach's alpha (α) and composite reliability (CR). The composite reliability (CR) values for all

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constructs exceeded the threshold of 0.70 (Hair et al., 2019), with values ranging above 0.90, confirming good internal consistency across all measures. In terms of convergent validity, the Average Variance Extracted (AVE) for each construct was above the 0.50 threshold (Fornell & Larcker, 1981), with AVE values ranging from 0.509 to 0.642, suggesting that the constructs explained sufficient variance in their indicators. The findings supported the measurement model's applicability for additional structural analysis by confirming its sufficient convergent validity and reliability.

Table 2: Construct Reliability and Validity

	Cronbach's Alpha	**rho_A**	**Composite Reliability**	**Average Variance Extracted (AVE)**
CG	0.889	0.889	0.915	0.642
ES	0.932	0.933	0.943	0.622
LO	0.947	0.949	0.953	0.509

The Heterotrait-Monotrait (HTMT) criterion was used to evaluate discriminant validity by determining whether the constructs were sufficiently different from one another. All of the HTMT values were below the suggested threshold 0.90 (Henseler et al., 2015), as indicated in Table 3., verifying sufficient discriminant validity.

Table 3: Heterotrait-Monotrait Ratio (HTMT)

	CG	**ES**	**LO**
CG			
ES	0.469		
LO	0.617	0.592	

4.3 Structural Model

For structural model assessment, the first step was to use the variance inflation factor (VIF), as described by Hair et al. (2011), to evaluate the predictors' collinearity. According to Hair Jr et al. (2017), a VIF of less than three to five was generally deemed appropriate. The VIF values for all constructs were below 3, ranging from 1.00 to 1.471, indicating no multicollinearity issues. The structural model's robustness was supported by the absence of collinearity, which guaranteed accurate regression estimates and suitably different constructs.

Table 4: Inner VIF Values

	CG	**ES**
CG		1.471
ES		
LO	1.000	1.471

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A structural equation model was employed to examine the relationships among the constructs. The R square values were classified as substantial if they were greater than 0.67, moderate if they were between 0.33 and 0.67, and weak if they were less than 0.33 (Chin, 1998). The path coefficients for all direct relationships in this study were significant, with values ranging from 0.319 to 0.328, indicating substantial effects between the constructs and the model explains a considerable portion of the variance in the dependent variables. Effect size (F^2) was also assessed to evaluate the impact of each predictor on the outcomes. According to Cohen (1992) recommendations, tiny, medium, and large effects were denoted by F^2values of 0.02, 0.15, and 0.35, respectively. The effect sizes for the key relationships in this study ranged from small (0.028) to large (0.471), confirming that the predictors had a meaningful influence on the outcomes. The results demonstrated how crucial it is to concentrate on constructs with higher effect sizes in order to enhance the model's prediction ability and match interventions with significant influencing factors.

Table 6: R Square (R^2)

	R Square	**R Square Adjusted**
CG	0.320	0.319
ES	0.328	0.325

Table 7: Effect Size (F^2)

	CG	**ES**
CG		0.028
LO	0.471	0.216

Furthermore, bootstrapping was performed to assess the significance of the path coefficients, with all paths showing p-values below 0.05 (Hair Jr et al., 2017), confirming that the relationships were statistically significant. These findings suggest that the structural model is both robust and predictive, providing strong support for the hypothesized relationships between the constructs (see table 8. and 9.).

Table 8: Mean, STDEV, T-Values, P-Values

Path	**Original Sample (O)**	**Sample Mean (M)**	**Standard Deviation (STDEV)**	**T Statistics (|O/STDEV|)**	**P Values**
CG -> ES	0.167	0.164	0.049	3.389	0.000
LO -> CG	0.566	0.568	0.036	15.552	0.000
LO -> ES	0.462	0.465	0.049	9.485	0.000

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Table 9: Mediating testing

Path	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
LO -> CG -> ES	0.094	0.095	0.029	3.256	0.001

Based on the results, H1: learning outcomes have a significant positive effect on employability skills was supported. (Supported: $\beta = 0.462$, $p < 0.001$) H2: career guidance mediated the relationship between learning outcomes and employability skills was supported.

The analysis revealed the following key findings: The findings underscored the importance of integrating career guidance with skill development initiatives in vocational education. While learning outcomes served as foundational elements, career guidance enhanced their application in real-world contexts. These results aligned with Zhang et al. (2023), emphasizing the dual role of education and career guidance in fostering employability skills.

5.0 Discussion

Through the analysis of this study, the researcher elicited the following implications for practice that can help improve the alignment between vocational education and employability skills. First, curriculum developers should prioritize the integration of generic skills (such as communication, problem-solving, and adaptability) alongside technical expertise in vocational education programs. As the study showed, these transferable skills were crucial for enhancing the employability skills of graduates in a rapidly evolving employment market. While technical skills remain important, employers are increasingly seeking candidates who can think critically, work collaboratively, and adapt to new challenges, making the inclusion of these generic skills essential to ensuring graduates are well-rounded and prepared for diverse career opportunities. Second, vocational colleges should consider expanding their career guidance services to meet the diverse needs of students. The fast-paced development of society and the employment market mean that students must be equipped not only with academic and technical knowledge but also with the guidance needed to navigate their career paths effectively. By offering more tailored career services, such as personalized career counseling, internship placement support, and soft-skills training, vocational colleges can better prepare students for the demands of the workforce and improve their overall employability skills. These services should be proactive and adaptable, recognizing that students' career needs evolve throughout their education and into their early career stages. Finally, policymakers must take an active role in strengthening the career guidance infrastructure across vocational colleges. This included allocating adequate resources to build and maintain dedicated career services, as well as fostering partnerships between educational institutions, employers, and industry leaders. Policymakers should create frameworks that enable vocational colleges to be more responsive to changes in the labor market, ensuring that curricula remain relevant and that graduates have the necessary skills to thrive. Additionally, the establishment of clear guidelines for career guidance programs would help bridge the gap between vocational college and the employment market, allowing for better alignment between the skills taught in vocational colleges and the skills demanded by employers. By investing in career guidance infrastructure, policymakers can enhance the employability skills of graduates and foster a more efficient transition from education to employment.

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These recommendations are vital for ensuring that vocational college remains relevant and effective in preparing students for the future workforce. By fostering stronger connections between education, career guidance services, and the employment market, all stakeholders, such as, curriculum developers, vocational colleges, and policymakers, can work together to create an ecosystem that support both the personal development of students and the economic needs of society.

This study has several limitations that should be considered when interpreting the findings. The sample was drawn from a limited number of vocational colleges in China, which may limit the generalizability of the results. The use of a cross-sectional survey design prevented causal inferences from being made. Additionally, the reliance on self-report data may be subject to bias. Future research could address these limitations by using a longitudinal design, collecting data from multiple vocational colleges, and incorporating objective measures of employability skills. Further research could also explore the specific components of career guidance programs that are most effective in enhancing employability skills.

6.0 Conclusion

This study provided empirical evidence on the relationships between learning outcomes, career guidance, and employability skills among vocational graduates in China. The findings highlighted the synergistic effects of education and career guidance, offering actionable insights for enhancing vocational college graduates' employability skills. Future research should explore longitudinal impacts and extend the model to other educational contexts.

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