THE IMPACT OF TEACHERS INFORMATION TECHNOLOGY SKILLS ON EMPLOYMENT MANAGEMENT EFFECTIVENESS OF PRIVATE HIGHER VOCATIONAL COLLEGES IN GUANGZHOU, CHINA

Canwei Chen
Master Degree in Educational Management, Rattana Bundit University, Thailand
Corresponding author, E-mail: 1220381438@qq.com
Pratuang Phumpatrakom
Educational Management, Rattana Bundit University, Thailand
Promphak Bungbua
Educational Management, Rattana Bundit University, Thailand

Abstract

The objectives of this study were: 1) to study the current status of teacher information technology skills in private higher vocational colleges in Guangzhou; 2) to examine the impact of teacher information technology skills on the effectiveness of employment management in private higher vocational colleges in Guangzhou; and 3) to propose guidelines for enhancing the information technology skills of teachers in private higher vocational colleges in Guangzhou. The target population consisted of approximately 12,000 teachers, with a calculated sample size of 384.16. A total of 410 valid responses were collected via an online questionnaire. Data analysis involved descriptive statistics, correlation, and regression analysis. Findings revealed that while most teachers possess basic IT skills, significant gaps remain in the integration of IT with educational management and data-driven decision-making—highlighting integration ability as the weakest area. Correlation and regression analyses showed that IT application, integration, and support abilities all positively influence employment management effectiveness, with integration ability having the greatest impact. Drawing on Self-Efficacy Theory and the Technology Acceptance Model , the study further confirmed that perceived usefulness and ease of use indirectly enhance employment management through improved teacher self-efficacy and behavioral intention. Accordingly,

strategic recommendations include differentiated training, dynamic evaluation, and optimized resource allocation to support digital transformation.

Keywords: Teacher Information Technology Skills, Employment Management Effectiveness, Higher Vocational College

Introduction

In the context of accelerating global digital transformation, information technology (IT) has become a critical driver in modernizing education management, especially in vocational education. With the integration of artificial intelligence, big data, and cloud computing, educational institutions are transitioning from experience-based to data-driven management systems. As key actors in developing skilled talent, higher vocational colleges play an essential role in enhancing students' employability. However, many institutions still face challenges due to teachers' limited IT competencies, which hinder the effectiveness of employment management.

Despite national policies emphasizing digital reform—such as the Action Plan for Improving the Quality of Vocational Education (2020–2023)—the practical application of IT in employment services remains underdeveloped. Teachers often lack proficiency in data analysis, digital platforms, and system integration, resulting in inefficient processes and low accuracy in employment services. These limitations weaken both the competitiveness of vocational colleges and the employment outcomes of their students.

While extensive research has explored IT integration in teaching, limited attention has been paid to its role in employment management. Most existing studies overlook the connection between teachers' IT skills and the effectiveness of employment decision-making, data utilization, and career services—especially in private vocational institutions. Moreover, there is a lack of theoretical frameworks combining IT skill development with educational management effectiveness.

This study addresses these gaps by investigating the impact of teachers' IT skills on employment management in private vocational colleges in Guangzhou. Drawing on Self-Efficacy Theory and the Technology Acceptance Model (TAM), it constructs a theoretical

model and provides empirical evidence to support practical improvements in teacher training, policy development, and employment service optimization. The findings aim to promote a shift from experience-led to data-driven employment management and contribute to the broader goals of vocational education reform in China.

Research Objectives

1.To study the current status of teacher information technology skills of private higher vocational colleges in Guangzhou, Guangdong province, China.

2.To study the impact of information technology skills on Employment Management Effectiveness.

3. To propose the guidelines for improving teacher information technology skills of private higher vocational colleges in Guangzhou, Guangdong Province, China.

Conceptual Framework

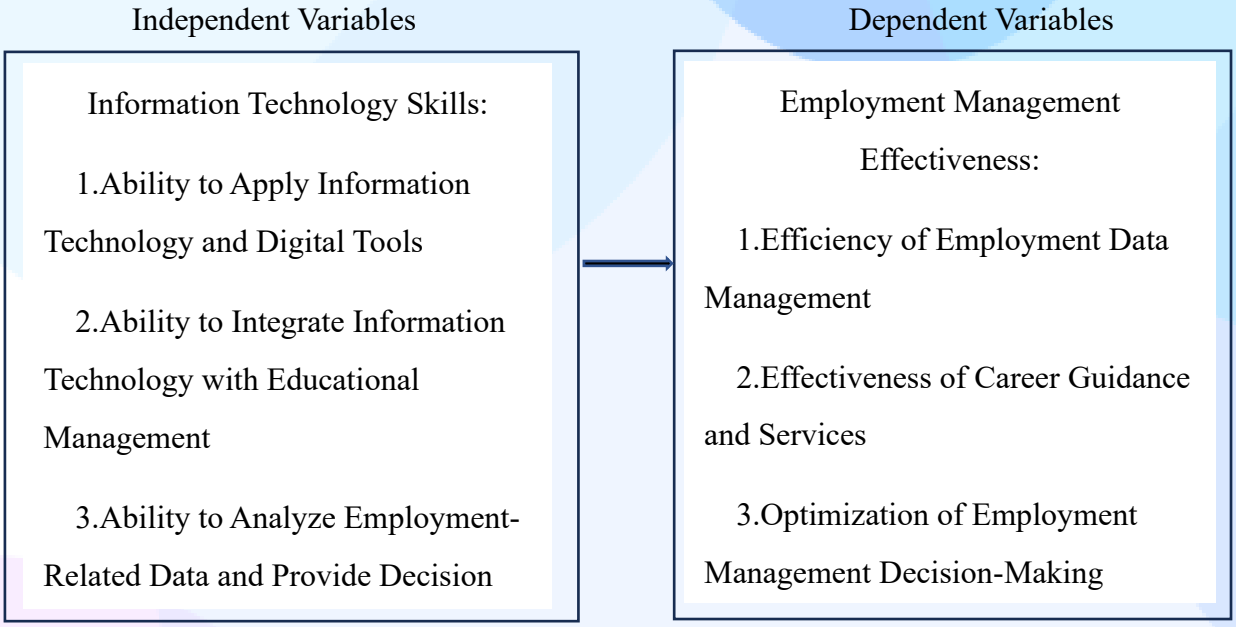

Figure 1 Conceptual Framework Diagram

Hypotheses

H1:Teachers' ability to apply information technology and digital tools has a significant positive impact on the employment management effectiveness of private higher vocational colleges in Guangzhou.

H2:Teachers' ability to deeply integrate information technology with educational management has a significant positive impact on the employment management effectiveness of private higher vocational colleges in Guangzhou.

H3:Teachers' ability to analyze employment-related data and provide decision support has a significant positive impact on the employment management effectiveness of private higher vocational colleges in Guangzhou.

Literature Review

1.Basic Theories

This study is grounded in four interrelated theoretical frameworks that collectively explain the relationship between teachers' information technology (IT) skills and the effectiveness of employment management in vocational colleges.

（1）Self-Efficacy Theory

Proposed by Bandura (1986, 1997), self-efficacy theory emphasizes individuals' belief in their capability to organize and execute actions required to manage specific tasks. It highlights the influence of self-perception on behavior, motivation, and outcomes. In this study, teachers' self-efficacy is considered a key factor affecting their confidence and ability to apply IT tools effectively in employment management.

（2）Teacher Professional Development Theory

Teacher professional development refers to the continuous process through which teachers improve their knowledge, skills, and professional identity. This study adopts the view that enhancing teachers' IT competencies is a crucial aspect of their professional growth, especially in adapting to digital education reforms and employment service demands in vocational settings.

（3）Technological Pedagogical Content Knowledge (TPACK)

TPACK integrates technological knowledge (TK), pedagogical knowledge (PK), and content

knowledge (CK) into a unified framework, emphasizing how teachers effectively apply technology in specific instructional and management contexts. In this research, the TPACK model helps explain how teachers integrate IT tools into employment-related tasks such as data analysis, career guidance, and decision-making.

（4）Technology Acceptance Model (TAM)

Developed by Davis (1989), TAM identifies perceived usefulness (PU) and perceived ease of use (PEOU) as core factors influencing individuals' acceptance and use of technology. The model has been widely applied in educational settings to assess teachers' adoption of digital tools. This study uses TAM to examine how vocational college teachers' perceptions of IT usefulness and usability influence their behavior in employment management practices.

By integrating these four theories, the study constructs a comprehensive framework to explore how teachers' IT skills, confidence, and acceptance levels impact their performance in employment management, thereby offering theoretical grounding for empirical analysis and intervention strategies.

2. Overview of Foreign Research

（1）Research on ICT-Based Teaching Skills

International studies have extensively explored the integration of information and communication technology (ICT) into teacher training, especially for in-service teachers. Initiatives such as the United States' "Preparing Tomorrow's Teachers to Use Technology (PT3)," the United Kingdom's ICT Training for Teachers program, and Singapore's Masterplan for IT in Education have focused on equipping teachers with the digital competencies required for modern classrooms. These national strategies emphasize practical training, cross-sector collaboration, and the alignment of ICT skills with pedagogical goals. Moreover, scholars highlight the importance of long-term, sustainable professional development models to ensure effective ICT adoption in education (Matt et al., 2009).

（2）Research on Educational Employment Management

In developed countries, employment management has long been embedded within the education system to support workforce planning, social stability, and individual development. Research shows that dual mechanisms—public and private—are often used to deliver graduate employment services, with an emphasis on strengthening career guidance. Scholars

such as Valencia et al. (2023) and Bragg (2011) have examined the misalignment between graduate skills and labor market needs, pointing to factors such as weak employability, inadequate guidance, and limited information flow. Foundational theories—including Parsons' trait-factor theory, Holland's personality–career type match, and Super's career development theory—continue to shape global employment management models, adapting to local contexts while drawing from international best practices.

3. Overview of Domestic Research

（1）Research on ICT-Based Teaching Skills in China

Since the late 1990s, the integration of ICT into teaching practices has gained momentum in China, supported by national strategies that emphasize its role in driving educational modernization. Scholars have explored ICT application mainly in secondary education, with research focusing on instructional design, student engagement, and digital resource utilization. Studies define teachers' ICT competence as a combination of information literacy, instructional design, digital communication, and technology integration skills (Gu Xiaoqing, 2020; Wang Weijun, 2018). However, limitations persist due to outdated pedagogical beliefs, insufficient training, and underutilization of digital platforms. Research on vocational college teachers' ICT skills is comparatively limited, with few empirical studies addressing their role in non-instructional areas such as employment management.

（2）Research on Educational Employment Management in China

Domestic research on employment management in higher vocational colleges highlights issues such as employment–major mismatch, low job stability, and inadequate salary levels (Zhao Mengcheng, 2020). Scholars attribute these challenges to a lack of practical skills, insufficient career planning, and poor alignment with market demands (Li Wenqian, 2018; Su Li, 2015). Career guidance systems are often underdeveloped, lacking professional counselors and comprehensive curricula (Wen Jinshu, 2009). In the digital context, studies reveal problems such as limited personalization in services, underdeveloped data platforms, and weak information security (Chen Xiaojing, 2017). Overall, research calls for enhanced digital capabilities among teachers to improve precision employment services, yet empirical evidence linking ICT skills to employment management performance remains scarce.

4. Literature Review

International research on information-based teaching skills mainly focuses on in-service teachers, with limited attention to university students. In contrast, Chinese studies emphasize developing these skills among higher education students, often exploring their structure, current status, and practical challenges.

Regarding employment in vocational education, developed countries such as the United States and Germany have established mature systems emphasizing curriculum design, school-enterprise cooperation, and practical skill training. These systems effectively support labor market demands and economic development.

Chinese research, however, focuses more on employment management, teaching strategies, and industry-education collaboration. In response to graduate employment challenges, national policies have encouraged vocational students to actively seek jobs, while institutions expand internships and employment pathways through cooperation with industry.

Although the link between information-based skills and employment management has been discussed, empirical studies remain scarce. This study addresses this gap by investigating teachers in private vocational colleges in Guangzhou to explore the impact of their IT competencies on employment management effectiveness.

Research Methodology

1.Population and Sample

The target population of this study consists of teachers involved in teaching and employment management at 14 private higher vocational colleges in Guangzhou, totaling approximately 12,000 individuals. Using the Kolmogorov sampling formula with a 95% confidence level and 5% margin of error, the calculated minimum sample size was 384. To account for possible non-responses, 410 questionnaires were distributed, with 403 valid responses ultimately collected, yielding an effective response rate of 98.29%.

2.Research Instrument

A self-developed questionnaire titled “Survey on the Impact of Information Technology Skills of Teachers in Guangzhou Private Vocational Colleges on Employment Management Effectiveness” was used. The questionnaire design was guided by self-efficacy

theory and the technology acceptance model, covering dimensions such as digital tool application, IT integration in management, and employment data analysis. The instrument's content validity was verified by 10 experts across relevant fields, yielding a CVI of 1.0. A pilot test with 50 respondents was also conducted, and exploratory factor analysis confirmed strong construct validity.

3.Data Collection

Data were collected using a mixed-methods approach, including online questionnaires (via Wenjuanxing) and semi-structured interviews. The entire survey process was conducted anonymously to ensure objectivity. All 410 distributed questionnaires were retrieved, with 403 considered valid for analysis.

4.Data Analysis

Quantitative data were analyzed using SPSS. Descriptive statistics, Pearson correlation, and regression analysis were performed to test the research hypotheses and examine the mediating role of self-efficacy. Reliability testing using Cronbach's Alpha showed all subscales exceeded 0.8, indicating high internal consistency. Validity was further confirmed through KMO and Bartlett's tests. Qualitative interview data were analyzed thematically to enrich and support the quantitative findings.

Research Results and Discussion

1.Research Findings

(1)Current Status of Teachers' IT Skills

Analysis of 403 valid responses from 14 private vocational colleges in Guangzhou revealed that teachers' overall information technology (IT) skills are above average but show structural imbalances.

Digital Tool Application had the highest mean score (M = 3.84), with 72.6% of teachers proficient in basic tools like Office software and online platforms.IT Integration into Educational Management scored moderately (M = 3.71), with only 31.5% reporting full integration of digital systems into management workflows.Employment Data Analysis & Decision Support was the weakest (M = 3.54), as 41.2% of teachers lacked confidence in tasks like data mining and forecasting.

Demographic analysis indicated that older and doctoral-level teachers performed better in data analytics, while younger teachers were more skilled in tool operation but lacked integration ability.

(2) Impact of IT Skills on Employment Management Effectiveness

Regression analysis ($R^2 = 0.169$, $p < 0.05$) confirmed that teachers' IT skills positively affect employment management outcomes.Digital Tool Application had the strongest effect ($\beta = 0.207$, $p < 0.01$), improving basic employment services.IT Integration Ability ($\beta = 0.147$) enhanced system coordination and process efficiency.Data Analysis Ability ($\beta = 0.086$) contributed to data-driven decision-making.

However, IT skills explained only 16.9% of the variation, suggesting other influencing factors such as policy support and infrastructure.

(3)Strategic Recommendations

To improve teachers' IT competencies, the study recommends:

Tiered training based on age and role.System integration of employment and academic data platforms.Enhanced analytics training using tools like SPSS and Tableau.Dynamic evaluation and incentives to motivate continued engagement.Stronger resource allocation and enterprise collaboration to bridge skills with practice.

2.Discussion

(1) Discussion on Teachers' IT Skill Levels

Findings align with the Technology Acceptance Model (TAM)—teachers excel in basic tools perceived as useful and easy to use (Teo, 2011). However, low self-efficacy, as explained by Bandura's Self-Efficacy Theory, limits application in complex tasks like employment forecasting. Interviews confirmed that while teachers manage daily tools well, they lack confidence in deeper data integration, mirroring results from Liang Yunzhen (2016) and Li Mang & Jiang Kewei (2012).

(2)Discussion on IT Skills and Employment Management

Empirical results reinforce that digital competencies are foundational to improving employment data accuracy, service quality, and decision-making efficiency. This supports earlier findings by Zhang Lixin & Liu Yuan (2017) on the need for intelligent employment systems. The role of IT integration ($\beta = 0.147$) confirms Bandura's argument that

environmental support influences behavioral outcomes, while the smaller but significant effect of data analysis skills signals a need for deeper training interventions.

(3)Discussion on Enhancement Guidelines

The proposed strategies—tiered training, system integration, and performance incentives—correspond with the TPACK framework (Koehler & Mishra, 2005) and professional development theory (Perry & Lewis, 2009). Aligning training with real-world employment data scenarios ensures contextual learning and motivates sustained IT adoption. These measures support not only teaching reform but also the modernization of employment management systems in vocational education.

Table 1: Current IT Skill Levels

Skill Dimension	Mean Score (M)	Key Findings
Digital Tool Application	3.84	72.6% of teachers proficient in basic tools like Office software and online platforms
IT Integration into Educational Management	3.71	31.5% fully integrate digital systems into workflows
Employment Data Analysis & Decision Support	3.54	41.2% lack confidence in data mining and forecasting

Table 2: Regression Results on Employment Management Effectiveness

Skill Dimension	Standardized Coefficient (β)	Significance (p)
Digital Tool Application	0.207	< 0.01
IT Integration Ability	0.147	< 0.05
Data Analysis Ability	0.086	< 0.05

Table 3: Demographic Performance Differences

Teacher Demographics	Performance Characteristics
Older Teachers	Stronger in data analytics
Doctoral-level Teachers	More competent in complex tasks
Younger Teachers	Better at operating tools but weak in integration

Research Suggestions

This study examined the relationship between teachers' ICT competencies and employment management effectiveness in private vocational colleges in Guangzhou, employing questionnaires, interviews, and pilot implementations. Key findings indicate that ICT skills in areas such as data analysis, system integration, and employment service design significantly enhance employment outcomes. However, disparities in teacher competence, limited resource access, and the gap between technical application and human-centered services still exist.Key suggestions are as follows:

(1)Promote Tiered ICT Training:

Develop stratified training systems tailored to different teacher demographics, and introduce mentoring and micro-credential mechanisms to encourage continuous learning.

(2)Enhance Technology-Management Integration:

Build integrated platforms that connect employment and teaching data, leveraging AI and blockchain to support decision-making and improve transparency.

(3)Strengthen Incentives and Evaluation Systems:

Link ICT application outcomes with teacher evaluations and promotion criteria, while establishing dynamic feedback systems to guide personalized professional development.

(4)Foster University–Enterprise Collaboration:

Create joint "employment data labs" with industry partners to share labor market insights and co-develop practical teaching scenarios.

(5)Focus on Ethical and Sustainable ICT Development:

Address digital equity, ensure ethical use of student data, and encourage institutions to build long-term ICT support structures for teachers.

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