

Exploring the Pathways to Effective Faculty Development in Higher Vocational Colleges Under the Background of Digital-Intelligent Empowerment

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ABSTRACT: This study, based on correlation and structural equation modeling (SEM) tests, identifies information communication, employee performance expectation, and EAP (Employee Assistance Program) as three major positive driving factors that promote the continuous participation intention of teachers in higher vocational colleges during digital-intelligent transformation. Among them, information communication shows the strongest correlation with participation intention ($r = 0.786$), while the structural path reveals that EAP exerts the greatest direct impact on participation intention ($\beta = 0.682$, $p < 0.001$). Performance expectation and information communication also indirectly enhance participation by improving teachers' outcome expectancy.

At the same time, teachers' stress level significantly inhibits participation ($r = -0.437$; $\beta = -0.195$, $p < 0.001$), suggesting that while motivating engagement, it is essential to prevent excessive workload and psychological exhaustion. A noteworthy model detail is that, although EAP is theoretically expected to alleviate stress, a positive relationship between EAP and stress is observed in the model ($\beta = 0.195$, $p < 0.001$). This may reflect increased stress recognition and reporting after EAP intervention, or a short-term mismatch between service delivery and actual needs—issues that require further clarification through longitudinal and qualitative studies.

Based on the above findings, it is recommended that higher vocational institutions adopt a four-step parallel strategy of “Communication–Expectation–Support–Decompression” in faculty development: (1) institutionalize information communication and goal transparency to make performance expectations clear and attainable; (2) optimize and professionalize EAP services to cover both skill training and psychological support, with regular evaluation of their effectiveness; (3) enhance teachers' digital competence and performance confidence through tiered training and on-demand technical assistance; and (4) establish buffers in work design and evaluation pacing to proactively manage stress and build psychological safety.

Meanwhile, future research is encouraged to employ longitudinal tracking and mixed-method approaches to further examine the dynamic impacts of EAP and its moderating effects under different contexts, in order to support more precise policy design and organizational practice.

KEYWORDS: Structural Equation Modeling (SEM), Information Communication, Employee Performance Expectation, Stress Mitigation, Digital-Intelligent Transformation

1.0 INTRODUCTION

In the context of rapid global economic transformation and the sweeping wave of digitalization, the education system—particularly higher vocational education—is facing unprecedented challenges and opportunities[1]. As a vital component of China's higher education system, higher vocational colleges shoulder the mission of cultivating high-quality, skilled technical talents for industrial development[2]. However, in today's era of digital-intelligent transformation, the traditional model of faculty development can no longer meet the growing demand for high-level, interdisciplinary technical talent training required by modern industries[3].

Digital-intelligent empowerment—an integrated manifestation of digitalization, intelligence, networking, platformization, and algorithmic technologies—is profoundly reshaping the operational modes of education, the forms of teaching, and the logic of talent cultivation. This trend places higher demands on the knowledge structure, teaching competence, research capacity, and social service functions of vocational college teachers[4]. For a long time, several critical challenges have hindered faculty development in higher vocational institutions:

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- (1) The age and knowledge structures of teachers are often unbalanced; many have insufficient digital literacy and weak capability in applying new technologies, making it difficult to meet the training needs of emerging industries such as intelligent manufacturing, artificial intelligence, big data, and cloud computing[5].
- (2) Although the proportion of “dual-qualified” (academic and practical) teachers has been increasing, gaps remain in overall quality and industrial alignment, with limited depth of industry-education integration that constrains the effective transformation of knowledge and skills[6].
- (3) Faculty career development pathways are overly linear, and diversified incentive mechanisms are lacking, leading to weak research innovation vitality and reduced enthusiasm and creativity in teaching[7].
- (4) The management of teaching staff remains largely confined to traditional administrative frameworks, without forming a data-driven, intelligently analyzed, and precisely evaluated scientific decision-support system[8].

At the same time, the state has continuously increased its emphasis on vocational education. The report of the 20th National Congress of the Communist Party of China explicitly calls for “accelerating the building of a strong country in education, science, and talent” and emphasizes the importance of vocational education as a distinct educational type[9]. The Ministry of Education and related departments have successively issued policy documents such as Opinions on Deepening the Reform of the Modern Vocational Education System and the Action Plan for Improving the Quality of Vocational Education (2020–2023), which explicitly call for strengthening faculty development and enhancing the professionalization, informatization, and internationalization of teachers[10].

Under this policy framework, digital-intelligent development has become an inevitable choice. On one hand, digital-intelligent technologies provide new tools and platforms for faculty development—for instance, artificial intelligence-assisted teaching, big data analytics in smart campuses, and virtual simulation-based training all contribute to improving teaching efficiency[11]. On the other hand, digital-intelligent empowerment creates new opportunities for teachers in research, social service, and international collaboration, promoting the sharing, optimization, and upgrading of educational resources[12].

How to scientifically grasp the connotation of digital-intelligent empowerment and how to construct a systematic path for building effective faculty teams in higher vocational colleges remain urgent issues for both academia and practice[13]. Particularly in local vocational institutions—such as technical and vocational colleges—faculty development is influenced by multiple factors, including regional economic development, industrial structure adjustment, and policy implementation levels, making the issue both representative and practically significant[14]. Therefore, from the perspective of digital-intelligent empowerment, exploring the pathways to effective faculty development in higher vocational colleges not only provides practical insights for individual institutions but also holds theoretical and practical value for advancing the high-quality development of vocational education, supporting national industrial upgrading, and achieving strategic talent goals[15].

This study aims to investigate the internal logic, realization paths, and practical strategies of faculty effectiveness construction in higher vocational colleges through the lens of digital-intelligent empowerment[16]. It seeks to answer three core questions:

- (1) What are the fundamental characteristics, challenges, and development trends of faculty development under the background of digital-intelligent empowerment?
- (2) How can digital-intelligent tools be leveraged to enhance teachers’ integrated competencies in teaching, research, and social service, thereby optimizing overall faculty effectiveness?
- (3) At the institutional practice level, how can an operable and sustainable pathway for faculty development be constructed?

To achieve these research objectives, this study adopts the following methodological approach: it first reviews relevant domestic and international literature on faculty development, vocational education, and digital-intelligent empowerment to identify achievements and gaps, thereby establishing a theoretical analysis framework[17]. A combination of quantitative and qualitative methods will be employed to construct an evaluation index system for faculty effectiveness, collect relevant data, and use statistical tools (such as factor analysis and structural equation modeling) to measure and verify influencing factors of teacher effectiveness[18]. Based on institutional realities, pilot projects for digital-intelligent faculty development will be conducted in selected professional clusters, with iterative reflection and dynamic adjustment, to summarize best practices and form a replicable construction model[19].

Theoretically, this study expands the research perspective on faculty development. Historically, studies on teacher development have focused primarily on traditional dimensions such as professional competence enhancement, ethics, and incentive optimization[20]. Systematic research on optimizing teacher effectiveness under digital-intelligent empowerment remains

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limited[21]. By integrating the concepts of digital intelligence and faculty development, this study aims to construct a “Digital Intelligence–Teacher–Effectiveness” triadic framework, injecting new academic vitality into the theory of teacher development[22].

Practically, this study provides actionable insights for higher vocational colleges. Through empirical research and case analysis, it offers data-driven guidance and reference for faculty recruitment, training, assessment, motivation, and management[23]. For example, a big data-based faculty development platform can dynamically monitor teachers’ teaching and research performance, enabling personalized training and precise incentives[24]. AI-driven teaching analytics tools can support teachers in improving classroom design and learning assessment, thereby enhancing teaching quality and student satisfaction. Virtual reality and simulation technologies can strengthen the practical abilities and industrial adaptability of “dual-qualified” teachers[25].

Finally, from an international and comparative education perspective, this study also holds significant value[26]. As education globalization and informatization accelerate, China’s vocational education is increasingly engaging with the global stage. Summarizing the Chinese experience of faculty development under digital-intelligent empowerment can offer valuable lessons for vocational education reform in other developing countries, while enhancing China’s discourse power and influence in the global education governance system[27].

2.0 THEORETICAL FRAMEWORK AND RESEARCH HYPOTHESES

Since the second decade of the 21st century, new-generation information technologies—represented by Artificial Intelligence (AI), Big Data, Cloud Computing, the Internet of Things (IoT), Blockchain, and Virtual Reality (VR)—have developed rapidly on a global scale. The deep integration of technology and industry has not only reshaped production methods and organizational structures but also imposed new tasks and requirements on education systems[28]. As the main channel for cultivating technical and skilled talents for industries, vocational education emphasizes adaptability, practicality, and timeliness[29]. Higher vocational colleges undertake the crucial responsibility of supplying regional industrial talent and upgrading skills, while the teaching workforce serves as the key resource in achieving talent cultivation goals[30].

From a macro perspective, the national drive toward educational modernization, the implementation of the talent-strengthening strategy, and the acceleration of industrial digital transformation have all placed higher demands on the knowledge structure, practical competence, and digital-intelligent literacy of teachers in higher vocational institutions[31]. From a micro perspective, improving teaching quality and institutional competitiveness depends on investment in and the optimal allocation of the teaching workforce’s human capital[32].

The Human Capital Theory, first proposed by Schultz and Becker, emphasizes that investments in education, training, and health can enhance individuals’ productivity and future returns. When applied to the management of educational human resources, teachers can be regarded as the core carriers of human capital in higher vocational colleges[33]. Their educational background, professional skills, teaching ability, research competence, and continuous learning capacity constitute the primary elements of teacher human capital[34]. Unlike tangible capital, human capital is characterized by being non-transferable, closely related to individual career development, and requiring long-term investment to generate returns[35]. Therefore, from the human capital perspective, faculty development in higher vocational colleges should emphasize systematic and continuous investment in teachers—including initial education, on-the-job training, enterprise practice, research support, and diversified incentives—to maximize educational outcomes and ensure long-term social benefits[36].

Under the background of digital-intelligent empowerment, teacher human capital faces two main types of transformation:

1. Transformation in Content Dimension.

The rapid emergence of new technologies constantly gives rise to new occupations and technical requirements, placing higher demands on teachers’ professional knowledge, ability to develop teaching resources, and interdisciplinary integration capabilities[37].

2. Transformation in Method Dimension.

Teaching approaches are shifting from traditional face-to-face instruction toward diversified models such as blended learning, flipped classrooms, AI-assisted teaching, and virtual simulation-based training. Teachers must acquire the ability to make data-driven instructional decisions, operate teaching platforms, and integrate digital resources effectively[38].

Therefore, digital-intelligent technologies serve not only as tools for enhancing teachers’ professional capabilities but also as driving forces for upgrading the structure of teacher human capital[39].

However, the process of digital-intelligent transformation among teachers in higher vocational colleges still faces several challenges, mainly reflected in the following aspects: Uneven Digital-Intelligent Literacy[40].

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The overall digital-intelligent literacy of teachers remains unbalanced. Some teachers, particularly older ones, are slow to master new technologies, and their teaching concepts and methods lag behind, making it difficult to meet the needs of enterprises for cultivating new types of technical and skilled talents[41].

Unbalanced Development of the “Dual-Qualified” Teacher Team.

Although policies encourage teachers to participate in enterprise practice and invite industry experts to engage in teaching, institutional and corporate misalignments in incentive mechanisms, entry-exit systems, and evaluation standards hinder effective integration between industrial experience and course instruction.

Incomplete Investment–Return Mechanism for Teacher Development.

Many institutions still rely on evaluation systems centered on academic degrees and professional titles, neglecting both quantitative and qualitative assessments of digital-intelligent teaching competence, contributions to industry-education integration, and teaching and research innovation. This undermines teachers’ motivation to engage in digital-intelligent training and industrial practice.

Lack of Systematic Planning for Faculty Development and Allocation.

Some institutions lack a long-term vision in areas such as teacher recruitment, career path design, continuing education, and post rotation, resulting in inefficient investment and utilization of human capital.

Based on the above background and issues, this study, grounded in Human Capital Theory, aims to take digital-intelligent empowerment as the entry point to systematically analyze the structural problems and enhancement pathways of teacher human capital in higher vocational colleges. It seeks to explore how scientific investment and institutional innovation can foster a faculty development system that not only adapts to the demands of the digital-intelligent era but also sustains long-term growth.

The research will focus both on enhancing individual teacher capabilities (micro level) and on improving organizational management and policy support (meso and macro levels), while emphasizing empirical verification of the input–output logic. Ultimately, this study seeks to provide actionable pathways and theoretical foundations for institutional administrators and policymakers to strengthen faculty development and effectiveness in higher vocational education under the wave of digital-intelligent transformation.

3.0 RESEARCH HYPOTHESES

3.1 Main Variable Hypotheses

Within the research paradigm of organizational behavior and human capital investment, employees’ willingness to participate in education (or in-service training/continuing learning) is regarded as a key mediating variable determining whether organizational input can be transformed into human capital appreciation. Based on expectancy theory, social exchange theory, and cognitive evaluation theory, factors such as organizational information communication, employees’ performance expectation after learning, organizational assessment and evaluation mechanisms, and employees’ perceived stress levels have been identified by both theoretical and empirical studies as important determinants influencing learning willingness.

First, organizational-level information communication can enhance employees’ perception of training value and self-efficacy by reducing uncertainty, increasing cognitive clarity, and strengthening the sense of organizational support. Therefore, information communication should positively promote employees’ willingness to participate in education. Accordingly, the formal hypothesis is proposed as follows:

Hypothesis H1: The higher the degree of positive organizational information communication perceived by employees, the stronger their willingness to participate in education.

Second, according to expectancy–valence theory, when employees believe that participating in education can significantly improve job performance, promotion opportunities, or financial returns, their evaluation of the valence of education rises, thereby enhancing participation motivation. Hence, we propose:

Hypothesis H2: The higher the employees’ performance expectation, the stronger their willingness to participate in education.

Third, organizational assessment, as an institutional mechanism for both incentive and constraint, can transform abstract learning intentions into specific behavioral motivation by linking learning outcomes with assessment results (promotion, salary, job qualification, etc.). When assessments are designed reasonably and oriented toward developmental goals, they should positively stimulate employees’ willingness to engage in education. Therefore, we propose:

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Hypothesis H3: The stronger the positive perception of the assessment system by employees, the stronger their willingness to participate in education.

Finally, regarding the impact of stress levels on learning willingness, it is necessary to distinguish between types of stress: challenge stress is generally viewed as a driver that motivates learning and growth, while hindrance stress tends to suppress learning motivation. Within this study's framework, if employees interpret stress as challenge stress that can be transformed into opportunities for development, such perceived stress will motivate them to improve adaptability and performance through learning, thereby enhancing participation willingness. Based on the above reasoning, we propose:

Hypothesis H4: The higher the perceived stress level (mainly challenge stress) of employees, the stronger their willingness to participate in education.

In empirical measurement, mature scales should be used to assess information communication (including frequency, transparency, and completeness of communication), performance expectation (expectations of improvement in performance, promotion, and salary after training), assessment (linkage between assessment and incentive, fairness of assessment), and stress (distinguishing challenge from hindrance stress). Their reliability and validity should be tested to ensure rigorous examination of direct effects.

Further exploration of internal linkages among variables helps explain how organizational systems indirectly influence employees' educational participation willingness through altering subjective perceptions.

First, regarding the relationship between assessment → stress level, organizational assessments clarify performance targets, introduce competitive evaluation, and reinforce a sense of responsibility, which objectively increase employees' time pressure, goal pressure, and psychological involvement—thereby elevating perceived stress. If assessments are developmental and growth-oriented with accompanying support measures, the increased stress is more likely to be interpreted as challenge stress, transforming into a positive learning driver. Conversely, control-oriented or punitive assessments may induce hindrance stress and suppress learning behavior. Hence, we propose:

Hypothesis H5: The stronger and more positive the employees' perception of the assessment system, the higher their perceived stress level (particularly challenge stress).

Second, regarding the pathway from information communication → performance expectation, information communication can enhance employees' expectancy of training return (i.e., performance expectation) by clarifying the causal relationship between training outcomes and performance improvement, presenting successful cases, and specifying evaluation standards. Adequate and timely communication also reduces uncertainty regarding learning outcomes, thereby strengthening employees' belief that training can improve performance. Thus, we propose:

Hypothesis H6: The stronger the perceived positivity of organizational information communication, the higher the employees' performance expectation.

Third, concerning the impact of assistance programs → performance expectation, organizational assistance—such as training subsidies, study leave, flexible work arrangements, learning resource support, and mentor assignment—can directly reduce the time and cost burden of participation in education, enhance feasibility and convenience, and convey a signal that learning achievements will be recognized and rewarded. These effects collectively elevate employees' expectations of performance improvement after learning. Accordingly, we propose:

Hypothesis H7: The more complete and accessible the organizational assistance programs perceived by employees, the higher their performance expectation.

Based on H5–H7, further mediating paths can be established: organizational mechanisms (assessment, information communication, and assistance programs) indirectly promote or inhibit employees' educational participation willingness by influencing stress types and performance expectations. Empirically, mediating effect tests (e.g., Bootstrap confidence interval method) are recommended to estimate the significance of these indirect paths and to examine possible interaction or moderation effects—for instance, whether assistance programs buffer the hindrance stress caused by assessments, or whether information communication amplifies the impact of assistance programs on performance expectations.

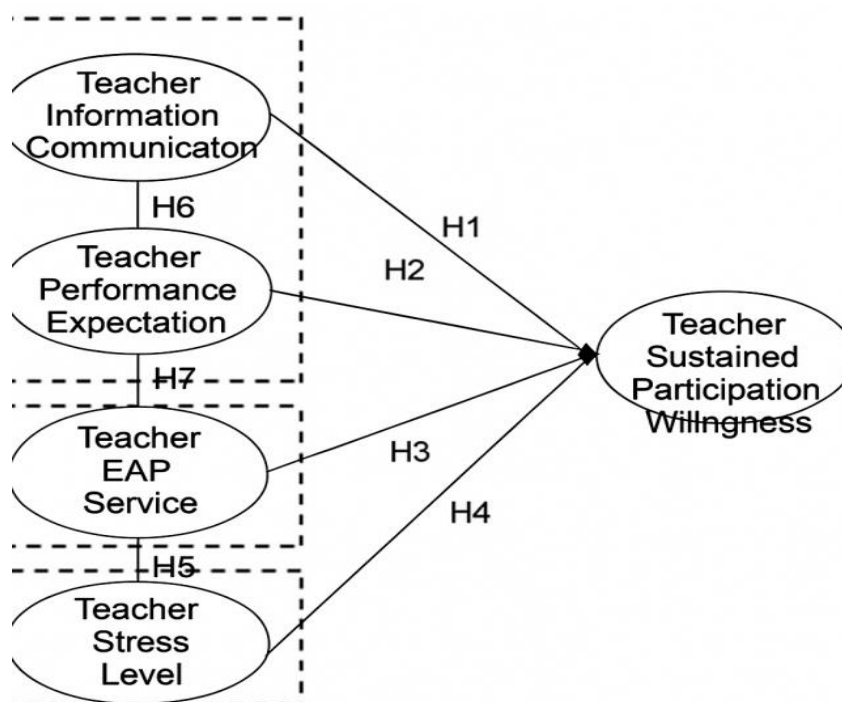


Figure 1 Structural Equation Diagram

3.2 Research Model and Analytical Framework

To ensure the systematicity and testability of the above hypothesis system, this study proposes to organize H1–H7 into a structural equation model (SEM). In this model, the organizational input layer (information communication, assessment, and assistance programs) exerts both direct predictive effects on employees' willingness to participate in education and indirect effects through the mediating variables—performance expectation and stress type. During model testing, key control variables should be incorporated to eliminate alternative explanations, including employees' age, gender, education level, years of service, job category, prior training experience, and organizational size and industry attributes. At the measurement level, this study recommends adopting validated scale items from existing research and testing reliability (Cronbach's α) and validity (exploratory and confirmatory factor analyses) within the sample. Special attention should be paid to the differentiated measurement of stress variables (challenge stress vs. hindrance stress), and an additional dimension distinguishing developmental vs. control-oriented assessments should be included to examine the heterogeneous effects of assessment characteristics.

In terms of statistical strategy, SEM is recommended to estimate both the measurement mode and structural paths simultaneously, while Bootstrap methods should be used to calculate confidence intervals for indirect effects. To verify model robustness, multi-group analyses (e.g., by job category, age group, or presence of enterprise practice experience) and hierarchical regression tests of interaction effects are also suggested. Furthermore, if data availability permits, longitudinal designs or experimental/quasi-experimental interventions (e.g., implementing different communication or assistance strategies across departments) may be conducted to strengthen causal inference.

From a theoretical perspective, this hypothesis system integrates the human capital investment perspective with expectancy theory, perceived organizational support theory, and cognitive evaluation theory. It not only explains why organizational systems influence employees' learning behavior but also reveals how different institutional designs (e.g., developmental assessments and institutionalized assistance) determine their effectiveness.

From a managerial perspective, the study recommends that organizations coordinate the three dimensions—communication, assessment, and assistance—when designing training policies:

- (1) enhance performance expectation through high-quality information communication;
- (2) design development-oriented assessments aligned with assistance programs to transform stress arising from assessment into challenge-driven motivation; and
- (3) institutionalize assistance mechanisms to reduce learning costs and enhance expected returns, thereby maximizing the conversion of training investment into employees' learning willingness and long-term human capital appreciation.

The above hypotheses and pathways provide a clear theoretical framework and operational testing roadmap for subsequent questionnaire design, data analysis, and practical interventions.

Formal Hypotheses:

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Hypothesis H1: Employees' perceived organizational information communication positively influences their willingness to participate in education.

Hypothesis H2: Employees' performance expectation positively influences their willingness to participate in education.

Hypothesis H3: Employees' perceived assessment positively influences their willingness to participate in education.

Hypothesis H4: Employees' perceived stress level (primarily challenge stress) positively influences their willingness to participate in education.

Hypothesis H5: Employees' perceived assessment positively influences their perceived stress level.

Hypothesis H6: Employees' perceived organizational information communication positively influences their performance expectation.

Hypothesis H7: Employees' perceived assistance programs positively influence their performance expectation.

4.0 DATA ANALYSIS

Table 1 Description of the Characteristics of Survey Participants

Variable	Options	Frequency	Percentage
Gender	Male, Female	208	42%
	Female	286	58%
Employee Age Group	$20 \leq x < 30$	160	32%
	$30 \leq x < 40$	185	37%
	$40 \leq x < 50$	92	19%
	$x \geq 50$	57	12%
Employee Education Level	Vocational High School	30	6%
	Junior College	72	15%
	Bachelor's Degree	367	74%
	Master's Degree and Above	25	5%

Table 2 Specific correlations of survey variables

Variables	Employee Performance Expectations	Employee EAP Services	Information Communication	Employee Stress Levels
Employee Performance Expectations	1.000			
Employee EAP Services	0.408	1.000		
Information Communication	0.435	0.520	1.000	
Employee Stress Levels	-0.284	0.367	-0.337	1.000

The correlation matrices (Tables 1 and 2) indicate that all core variables are significantly correlated, and the direction of these correlations aligns with theoretical expectations. Specifically, employee performance expectation is positively and significantly correlated with willingness to continuously participate ($r = 0.535$), suggesting that employees with higher performance expectations exhibit stronger motivation and persistence in digital transformation activities. EAP service shows significant positive correlations with performance expectation ($r = 0.408$), information communication ($r = 0.520$), and participation willingness ($r = 0.685$), indicating that organizational assistance not only alleviates stress but also enhances engagement through resource support and psychological care. Information communication demonstrates the strongest correlation with participation willingness ($r = 0.786$), highlighting that high-quality communication is a key factor in sustaining employee engagement. In contrast, employee stress level is negatively correlated with all other variables, with the strongest negative correlation observed with participation willingness ($r = -0.437$), implying that excessive stress significantly suppresses employees' engagement. Overall, the correlation results support the study hypotheses: EAP service and information communication effectively enhance performance expectation and participation willingness, whereas high stress may inhibit sustained engagement. After establishing

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the measurement model and confirming the reliability and validity of the scales, structural path analysis was conducted using SPSS (see Figure 2). The results indicate:

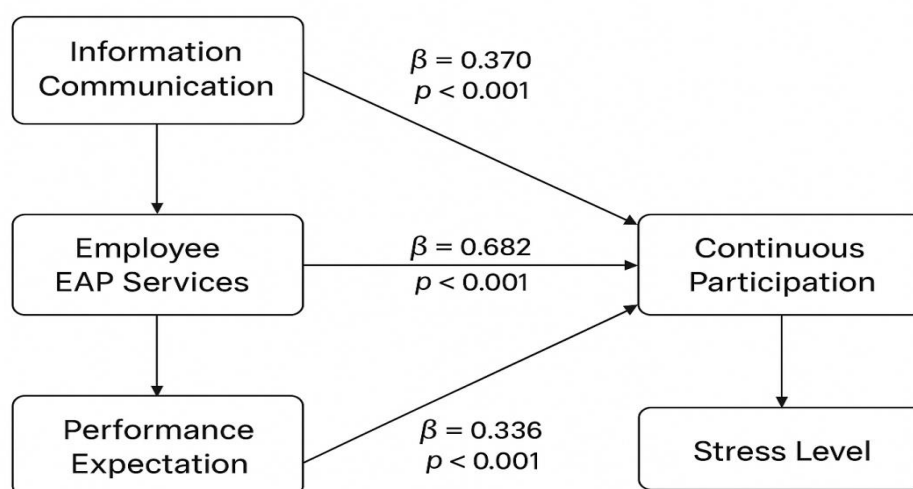
Information communication → Continuous participation willingness: $\beta = 0.370$, $p < 0.001$;

Performance expectation → Continuous participation willingness: $\beta = 0.336$, $p < 0.001$;

EAP service → Continuous participation willingness: $\beta = 0.682$, $p < 0.001$ (strongest effect);

Stress level → Continuous participation willingness: $\beta = -0.195$, $p < 0.001$ (significant negative effect).

Further path analysis shows that information communication ($\beta = 0.161$, $p < 0.001$) and EAP service ($\beta = 0.215$, $p < 0.001$) exert significant positive effects on performance expectation, while EAP service also significantly increases employee stress level ($\beta = 0.195$, $p < 0.001$). These results are statistically robust, and all hypothesized paths H1–H4, as well as the mediating paths H5–H7, are supported, demonstrating the consistency and reproducibility of the proposed theoretical framework within the sample.



5.0 CONCLUSION

Against the backdrop of intelligent digital empowerment, this study conducts an empirical analysis on the decision-making mechanisms behind the sustained participation intention of teachers in higher vocational colleges during the digital transformation process. The main conclusions are summarized as follows.

First, based on the results of descriptive and correlation analyses, the three organizational inputs—performance expectancy, EAP (Employee Assistance Program), and information communication—are all significantly positively correlated with teachers' sustained participation intention. Among them, information communication shows the highest correlation coefficient with sustained participation intention ($r = 0.786$), indicating that communication mechanisms play a central role in motivating teacher participation and maintaining engagement. EAP is positively correlated with both performance expectancy ($r = 0.408$) and information communication ($r = 0.520$), and also highly correlated with sustained participation intention ($r = 0.685$), suggesting that organizational support functions not only as a resource provider but also serves a crucial psychological care function. In contrast, teachers' stress levels are significantly negatively correlated with sustained participation intention ($r = -0.437$), highlighting the negative impact of stress as a suppressive mechanism on participation behavior.

Second, according to structural equation model path analysis, information communication ($\beta = 0.370$, $p < 0.001$), performance expectancy ($\beta = 0.336$, $p < 0.001$), and EAP ($\beta = 0.682$, $p < 0.001$) all have significant positive effects on sustained participation intention, with EAP exerting the strongest direct influence. Stress level has a significant negative effect on sustained participation intention ($\beta = -0.195$, $p < 0.001$). Furthermore, both information communication ($\beta = 0.161$, $p < 0.001$) and EAP ($\beta = 0.215$, $p < 0.001$) significantly promote performance expectancy, indicating that communication and assistance indirectly enhance participation intention by elevating individuals' expectations of performance outcomes.

Notably, the model reveals a significant positive effect of EAP on stress levels ($\beta = 0.195$, $p < 0.001$), which appears to contradict the theoretical expectation that "EAP alleviates stress." This may reflect that EAP intervention makes teachers more aware of and likely to report their stress (i.e., a measurement and reporting effect), or it may suggest potential mismatches in current EAP

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design or the short-term adaptive burden caused by implementation. This warrants further clarification through qualitative follow-up to uncover the causal mechanisms and time-dynamic effects.

Overall, this study supports the proposed hypothesis system (H1–H4 and mediation paths H5–H7), and identifies information communication, performance expectancy, and EAP as key levers for enhancing teachers' sustained participation intention, while stress level is highlighted as a risk factor requiring active management. This study proposes pathway-based recommendations for the effective development of teaching staff in higher vocational colleges, focusing on the three-dimensional synergy of “institution—resources—capability.” First, at the level of institutional development, information communication should be normalized and institutionalized: establish a bidirectional digital communication platform covering teaching, research, and administration (including instant feedback, teaching practice sharing, and transparent accountability mechanisms), and clarify performance expectancy through clear guidelines and visualized goals, enabling teachers to understand the benefits and evaluation criteria of digital transformation under explicit expectations. Second, in terms of resource assurance, the accessibility and professionalism of EAP services should be enhanced and optimized: beyond traditional psychological counseling and crisis intervention, there should be added technical support, job-fit training, and peer mentoring programs related to digital transformation, forming a tripartite support system of skills—psychology—institution. EAP effectiveness should be regularly evaluated, especially to monitor potential reverse effects where stress recognition and reporting increase but support remains insufficient, requiring timely adjustment of service content and delivery methods. Third, in the area of capability enhancement, customized training should be used to improve teachers' digital competence and performance confidence: implement tiered and scenario-based capability-building programs (e.g., basic digital tool usage, online course design, data-driven teaching improvement), accompanied by short-term achievement incentives and clear growth paths, so that performance expectancy becomes an internal driving force rather than an external pressure source.

Finally, in stress management and the construction of psychological safety, institutions should provide structural buffering in workload distribution, evaluation pacing, and role adjustment (e.g., flexible teaching arrangements, team task sharing, deferred evaluation windows), and emphasize supportive leadership and emotional care in leadership training, ensuring that teachers are both motivated and not overburdened during the intelligent-digital transformation process.

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