A Study on the Path of High Quality Development of Higher Vocational Education in Jiangxi Province, China under the Background of High Technology

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Abstracts

This study is based on the background of high-tech in China, with teaching and administrative staff in vocational colleges in Jiangxi Province, China as the research object, and explores the influencing factors of their innovative development as the main research content. Based on this argument and relevant literature, three basic potential variables of the model are constructed, namely: professional identity, organizational identity, and innovative behavior. There are three hypotheses in total, Construct a theoretical model for the study of innovative behavior among faculty and staff in vocational colleges in Jiangxi Province. The data was collected through online questionnaires, and statistical tests were conducted using SPSS22.0 and AMOS24.0 software. The statistical tests included descriptive statistical analysis, reliability and validity testing of test items, model fitting testing, and research hypothesis testing.

The research results found that: (1) professional identity positively affects the innovative behavior of faculty. (2) Organizational identity has no impact on the innovative behavior of faculty members. (3) Professional identity positively affects organizational identity. Finally, based on the research findings, corresponding research recommendations were proposed.

Keywords: Professional Identity; Organizational Identity; High-Quality Development of Higher Vocational Education

Introduction

From the perspective of the development of high-tech in various countries around the world, high-tech is not a single technology, but a group of cutting-edge new technologies in science, technology, and engineering. The various components of this group influence, supplement, and promote each other, and have a significant impact on the development and progress of human society.

The Chinese economy is in a critical period of optimizing industrial structure and transforming economic growth momentum; Leading high-quality development with high-tech innovation has become the primary task of real economic growth. For any organization, the core of its development is employees, and it is also the core of its sustainable and healthy development; The development of employees is the foundation of organizational development, which reflects that individual self-directed development behavior will directly affect corporate performance. Therefore, how to effectively improve employees' innovative behavior has become an important topic in management. Vocational education plays an important role in the national scientific and technological innovation system, and is an important component of

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scientific and technological integration. It is not only an important factor in enforcing national strategies, scientific and technological innovation, but also must provide comprehensive support for talent cultivation. Therefore, vocational colleges should be impartial, have the courage to take on responsibilities, and play an important role in implementing innovative development strategies. The characteristics of vocational colleges must have three basic functions: personnel training, scientific research, and social services. As the main force for the development of vocational colleges, faculty work has a certain level of innovation ability in order to better serve the foundation of vocational colleges. Vocational colleges, as an important component of society, should fully utilize their advantages in talent, science, technology, and education to provide direct services for economic and social development to society. Innovation is an important mission of higher education, and it is the ability and quality that faculty and staff should possess. The scientific research and development of human civilization in scientific research and social services require strong creativity to assist. Therefore, research should be conducted on the organizational management behavior of universities, personal psychological perception of university teachers, and personal innovation behavior, and appropriate management methods and incentive measures should be taken to stimulate the enthusiasm of teachers and continuously improve their innovation ability, Improving innovation performance undoubtedly has important theoretical and practical significance for promoting China's higher education reform and building an innovative country.

The main object of this study is the teaching staff of higher vocational colleges in Jiangxi Province, and explores the two factors of professional identity and organizational identity of teaching staff. Sample data is obtained through measuring questionnaires to verify the effectiveness of the constructed influencing factor model, and to explore the relevant factors that affect the innovative behavior of teaching staff in higher vocational colleges in Jiangxi Province, To provide a reference basis for formulating practical strategies to enhance the innovative behavior of teaching staff in vocational colleges in Jiangxi Province.

Literature Review

Connotation of Professional Identity

American scholar Arthur Salz defined 'profession' as a continuous special activity that people engage in to obtain sustained income. Occupation is a type of labor role that people acquire under the social division of labor system. Professional identity is based on social identity theory and is an individual's affirmative evaluation of their profession. Occupation is a manifestation of a social group, therefore, the identification of members within the group with occupation will inevitably follow the basic laws of social identification.

There are many expressions of occupational connotation in relevant research, defining occupational identity from the perspective of composition, and pointing out that occupational identity reflects to what extent an individual feels that their professional role is important and attractive (Tang Guojie, 2012). If an individual expresses greater identification with a certain group, their behavior will also be more inclined to comply with and comply with the behavioral norms of that group. From a constructive perspective, occupational identity is defined as the degree to which an employee perceives their professional role as important and attractive, which is equivalent to their perception of professional reality. In the field of education, there are also different opinions on the expression of teachers' professional identity.

Some scholars have defined teachers' professional identity from a dynamic and perceptual perspective.

The Connotation of Organizational Identity

Organizational identity is developed on the basis of social identity theory. The first relatively detailed and complete organizational identity model, combined with their respective research issues, defines organizational identity from different perspectives. Viewing organizational identity as a unified perception between individuals and certain groups or belonging to certain groups. Therefore, they understand organizational identity as a special form of social identity.

From the perspective of vocational college faculty members, organizational identity can be defined as the core factors such as the nature, educational philosophy, and talent development goals of vocational college faculty members and their affiliated schools. The degree of identification of faculty members with their affiliated organizations (colleges) is also the state in which vocational college faculty members define themselves based on the unique, core, and stable characteristics of their affiliated organizations.

Review of Research on Innovative Behavior

In the existing research on the influencing factors of employee innovation behavior, relatively speaking, the research is more focused on organizational factors, and the research on individual factors of employees is also relatively mature. However, there is not much comprehensive exploration of both organizational and individual factors of employees, coupled with insufficient research on individual factors of employees. There is little research on individual psychological and perceptual emotional variables that trigger individual innovative behavior. Individual psychological and emotional variables are the results of individual psychological changes caused by the perception of occupation in the organizational environment, which are derived from relatively stable psychological states, This affects individuals' attitudes towards the organization and further influences behavior through attitudes. Career identity and organizational identity refer to employees' attitudes and evaluations towards their profession or organization. Further research is needed on whether and how they affect individual innovation behavior.

In addition, there is not much research on teacher innovation behavior in China, and there is a lack of empirical research on teachers and auxiliary teaching staff in vocational colleges directly as research objects. At the same time, there is a lack of systematic understanding of their innovation behavior as a whole and analysis of related factors.

Proposing research hypotheses and constructing research models

Proposal of research hypotheses

Innovative Behavior (IB)

Some scholars believe that innovative behavior refers to the individual proposing and putting new ideas into practical action, which means that innovative behavior not only includes the generation of creative ideas, but also the successful implementation of creative ideas (Woodman, 1993; Amabile, 1996); Some scholars define employee innovation behavior as the process in which employees generate, promote, and implement innovative ideas in relevant organizational activities, and put them into practice. (Yang Yue, 2021)

This study refers to the creative labor and performance of teaching staff engaged in professional teaching, course design research, and social services in vocational colleges.

Organizational Identification (OI)

In 2013, Tan Daolun used employees in the financial services industry as the research object to verify that organizational identity has a significant impact on employee innovation behavior. Researcher Pan Yang found in his research on the innovative behavior of university teachers that the degree of professional identification of university teachers positively affects organizational identification and innovative behavior.

Overall, the organizational identity of faculty and employees refers to their recognition and acceptance of the values, culture, goals, rules, and other aspects of the organization they belong to. It is built on the sense of belonging, identification, and loyalty between the organization and employees. The organizational identity of this study refers to the sense of belonging, loyalty, and pride of faculty and staff engaged in vocational colleges towards the unit. Therefore, the following assumptions are proposed:

H1: The organizational identity of college faculty has a positive impact on individual innovation behavior

Professional Identity (PI)

Scholars have found that professional identity is dynamic and changes over time through relevant people, events, and experiences. At the same time, professional identity can also be characterized by the relevant characteristics of the profession (Beijaard, 1995). If an individual expresses greater identification with a certain group, their behavior will also be more inclined to comply with and comply with the behavioral norms of that group. At the same time, it can bring a sense of security and superiority to the individual, which can help in self reinforcement (Pratt, 1998).

Research has pointed out that innovative behavior is not a behavior that must be required and achieved within a role, but rather a spontaneous behavior that is recognized by organizations. Therefore, employees with a high sense of professional identity may be more engaged in their work, pay more attention to improving work efficiency and performance, improve poor work conditions, optimize work processes, improve products and self services, and consciously engage in proactive innovative behavior (Zhu Yongyue and Ma Miaohui, 2022).

This study refers to the dynamic process in which teaching and administrative staff engaged in vocational colleges gradually form a recognition of the concept and significance of their work in vocational colleges, and voluntarily adopt specific behaviors required for their profession. Career is equivalent to the label of an individual's self definition. Generally, faculty members with a high sense of professional identity tend to be dedicated and diligent in their work. On the basis of adhering to professional standards and ethics, they strive to uphold and defend their professional honor as much as possible, and also strive to exert their abilities and roles in their work. Due to the unique nature of the profession of university faculty, there is a certain demand for their active innovation. Therefore, professional identity will be beneficial for the generation of individual organizational identity and innovative behavior. Therefore, the following assumptions are proposed:

H2: The professional identity of college faculty has a positive impact on organizational identity

H3: The professional identity of college faculty has a positive impact on their innovative behavior

3.2 Theoretical Model Construction

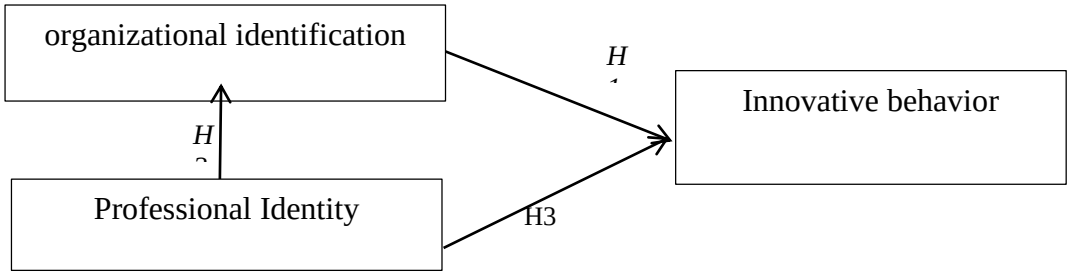
On the basis of existing research, construct three basic latent variables of the model, namely: professional identity, organizational identity, and innovative behavior. There are three hypotheses, namely:

H1: The organizational identity of college faculty has a positive impact on individual innovation behavior

H2: The professional identity of college faculty has a positive impact on organizational identity

H3: The professional identity of college faculty has a positive impact on individual innovation behavior

Figure 1: Theoretical Model for Research on Innovative Behavior of Vocational College Staff in Jiangxi Province, China:



Research Methodology

The research object is the in-service teaching staff of three public higher vocational colleges in Jiangxi Province (excluding retired, part-time, and temporary employees). Before distributing the formal questionnaire on a large scale, a small-scale questionnaire survey was conducted, and 42 predicted questionnaires were distributed. The samples were divided into 27 and 73 digits, and the 7 dimensions were subjected to T-tests for high and low clusters. The results showed that the p-values of all questions were less than 0.05, indicating significant differences between high and low clusters. This indicates that the test items have a certain level of discrimination and need to be retained. After prediction, the questionnaire was distributed through online questionnaires, After subsequent identification and screening of the 160 questionnaires collected, after excluding invalid questionnaires, 156 were valid, with a recovery rate of 98%. There were a total of 10 test items, all measured on the Likert 7 scale.

Descriptive Statistical Analysis

From the sample information description table, it can be seen that there is not a significant difference in the gender ratio of the surveyed faculty members, with slightly more female faculty members.

The age groups of the interviewed faculty members are divided into four age groups, namely 20-30 years old, 30-40 years old, 40-50 years old, and over 50 years old; The age of the surveyed faculty members is relatively concentrated between 30-40 years old, with the largest proportion, followed by 20-30 year old faculty members, followed by 41-50 year old faculty members, and there are relatively few faculty members over 50 years old.

The teaching experience of the interviewed faculty members is also divided into four stages, namely 5 years and below, 5-10 years, 10-20 years, and over 20 years; The proportion of faculty members interviewed in this study with teaching experience of 5-10 years is the highest, followed by those with teaching experience of 5 years or less, and then 10-20 years. The proportion of faculty members with teaching experience of over 20 years is the lowest.

The majority of the surveyed faculty members have a bachelor's degree, followed by a master's degree or below, and a very small proportion have a doctoral degree.

The proportion of surveyed faculty members with intermediate professional titles as lecturers is the highest, followed by newly hired junior professional titles as teachers, and the proportion of faculty members with associate and senior positions is the lowest.

From the positions held by the teaching staff in this survey, it can be seen that the majority are full-time teachers, and the proportion of administrative leaders and staff is also relatively large. A relatively small number of job positions are employees in the research department and other positions.

So overall, the interviewed faculty members are relatively young but have some work experience in vocational colleges, and their service positions are mainly frontline full-time teachers and administrative workers.

Reliability, Convergence Validity, and Discriminant Validity Testing

Before hypothesis validation, this model measures the reliability and validity of the scale. The reliability test is determined by observing Composite Reliability (CR) and Average Variance Extracted (AVE) (Nunnally, 1979);

After factor analysis in the first theory, the test item ib2 with a common factor load Std value less than 0.6 was removed, and then the item was retained through factor analysis. The cumulative variance contribution rate reached 67.263%, with less information loss, which can better explain the overall variance, as the sub analysis is more ideal.

After confirmatory factor analysis, it was found that all validity factors had a load capacity Std value greater than 0.6 in the common factor, which reached the standard range (greater than 0.6), thus ensuring the structural validity of the scale; If the SMC is greater than 0.3, it indicates that the question has reliability; CR is greater than 0.7 or above, indicating sufficient internal consistency between dimensions; It is generally believed that when the CR value is greater than 0.7 and the AVE value is greater than 0.5, the consistency between the measurement variable items is acceptable (Fornell&Larcker 1981);

Therefore, the reliability and inter dimensional convergence validity of this model in measuring questions are good.

Table 2 Reliability and Convergence Validity Test Data Table (PI)

Dimension	topic	Std	SMC	CR	AVE
Professional Identity(PI)	pi1	.815	.664	.762	.517
	Pi3	.799	.638		
	Pi2	.875	.766		

Table 3 Reliability and Convergence Validity Test Data Table (OI)

Dimension	topic	Std	SMC	CR	AVE
organizational identification(OI)	oi1	.811	.658	.759	.512
	Oi2	.861	.741		
	Oi3	.805	.648		

Table 4 Reliability and Convergence Validity Test Data Table (IB)

Dimension	topic	Std	SMC	CR	AVE
Innovative behavior(IB)	ib1	.788	.621	.750	.501
	Ib3	.855	.731		
	Ib4	.806	.650		

As shown in Table 4, the diagonal bold font represents the AVE root sign value, and the lower triangle represents the Pearson correlation of dimensions. The AVE root sign values of all dimensions are greater than the correlation between dimensions and other dimensions, indicating differential validity between dimensions. The average and standard deviation are shown in the table; Therefore, the reliability, convergence validity, and discriminative validity of this model are good.

Table 4 Correlation coefficients between the square root of AVE and latent variables

Dimension	reliability	convergent validity	discriminant validity			descriptive statistics		
	Cronbach Alpha	AVE	OI	PI	IB	average value	standard deviation	Number of cases
OI	.756	.512	.706			5.78	.553	156
PI	.787	.517	.380	.737		5.49	.706	156
IB	.714	.501	.349	.395	.666	5.61	.621	156

Empirical Results and analysis

Analysis of Model Fitting and Hypothesis Testing Results

In the structural equation model, the model fitting index is a statistical indicator that examines the degree to which the theoretical structural model fits the data. In this study, Amos 24.0 software was used to test the fitting degree of this model. Considering that the minimum fit functional Chi G square value of the absolute fit index is easily influenced by the sample size, some scholars suggest using the ratio of the chi square value to its degree of freedom as the standard, and combining the goodness of fit index (GFI), standard fit index (NFI), increased fit index (IFI), and comparative fit index (CFI) as supplements. The value range is between 0 and 1, and the closer it is to 1, the better, The root mean square (RMSEA) of approximation error should be less than 0.05, and the smaller the better (Bagozzi&Yi, 1988).

Goodness of Fit Index (GFI) and Adjusted Goodness of Fit Index (AGFI). GFI and AGFI reflect the proportion of covariance that the hypothetical model can explain. The larger the goodness of fit index, the higher the degree of explanation of the independent variable for the dependent variable, and the higher the percentage of changes caused by the independent variable in the total change.

It is generally believed that GFI and AGFI values greater than 0.9 indicate a high degree of fit between the model and the data. Therefore, it can be considered that the model fits the sample data well, and the model has a good degree of fit and can be used for the next step of operation.

Table 5 Results of goodness of fit indicators for structural models

Fit indicators	Acceptable suggestions	Fit value of this model
Chi square value and degree of freedom (Chi square/df)	1−5	1.17
Root Mean Square of Approximate Error (RMSEA)	＜0.05−0.08	0.03
Normative goodness of fit index (NFI)	＞0.9	0.93
Non canonical fit index (NNFI)	＞0.9	0.91
Model Comparison Fit (CFI)	＞0.9	0.94
Value added fit index (IFI)	＞0.9	0.92
Goodness of Fit Index (GFI)	＞0.8	0.93

As shown in Tables 6 and 7, VIF values less than 5 indicate no collinearity between dimensions, R-squared values of 0.412 indicate moderate explanatory power, and R-squared values of 0.156 indicate low explanatory power;

The confidence interval range does not include 0, and the P-value is less than 0.05, indicating that the hypothesis is valid. Therefore, in this study, except for hypothesis H1, all other two hypotheses are valid, as shown in Table 8.

Table 6 Path Analysis Table (Innovative Behavior IB)

dependent variable	argument	Not standardized coefficient		Standardized Coefficient	t	significance	95.0% of B confidence interval		Collinearity statistics	R square
		B	standard error	Beta			lower limit	upper limit	VIF	
IB	(Constant)	.712	.391		1.823	.069	-.056	1.481		.412
	PI	.301	.053	.291	5.686	.000	.197	.405	1.730	
	OI	.101	.056	.086	1.808	.071	-.009	.211	1.495	

Remarks: Professional Identity (PI), Organizational Identity (OI), Innovative Behavior (IB)

Table 7 Path Analysis Table (Organizational Identity OI)

dependent variable	argument	Not standardized coefficient		Standardized Coefficient	t	significance	95.0% of B confidence interval		Collinearity statistics	R square
		B	standard error	Beta			lower limit	upper limit	VIF	
OI	(Constant)	3.704	.226		16.384	.000	3.259	4.148		.156
	PI	.348	.041	.395	8.507	.000	.267	.428	1.000	

Remarks: Professional Identity (PI), Organizational Identity (OI), Innovative Behavior (IB)

Table 8 Description of research hypothesis results

Path relationship between variables	Significance	Hypothesis test results
H1: The organizational identity of faculty and staff has a positive impact on individual innovation behavior	.071	Not established
H2: The organizational identity of faculty and staff has a positive impact on individual organizational identity	.000	establish
H3: The professional identity of faculty and staff has a positive impact on individual innovation behavior	.000	establish

Conclusion and Discussion

The study constructs three potential variables based on social identity theory and achievement motivation theory, namely occupational identity and organizational identity innovation behavior. A model of the impact relationship of innovation behavior among faculty members in higher vocational colleges in Jiangxi Province was constructed. From the path analysis data in the study, it can be concluded that H1 is not valid among all hypotheses;

Assuming that H1 does not hold true, it is inconsistent with the research conducted by researchers Wang Yanzi and Luo Jinlian on the path of organizational identity on employee innovation behavior, which suggests that organizational identity significantly positively affects employee innovation behavior (Wang Yanzi and Luo Jinlian, 2010). It is possible that vocational college faculty and staff are more inclined to plan their personal careers for work innovation motivation, while organizational platforms are more focused on assisting roles. The organizational identity of faculty and staff has no direct impact on individual innovation behavior. That is to say, whether a person identifies with their organization does not directly affect their innovative behavior.

Assuming the establishment of H2, it means that the faculty and staff themselves are well aware of coexisting with the honor of the unit, so professional identity will affect organizational identity, which is consistent with the viewpoint proposed by Stryker (Stryker, 1980). If an individual identifies more with a certain group, they will also be more inclined to comply with and comply with the behavioral norms of that group.

Assuming the establishment of H3, like Payne's viewpoint, the perceived description of creativity and innovation in the working environment by organizational members will affect the motivation, values, and innovative behavior of organizational members; Organizational innovation atmosphere refers to an organization where employees are encouraged to think, try new ideas and methods, and have a positive and supportive culture of innovation. If a college establishes such an atmosphere, employees may feel that their work is more meaningful and challenging, and they are more likely to try new methods to solve problems, thereby enhancing their work motivation.

Recommendations

Based on the research findings, the following corresponding suggestions will now be proposed:

(1) Provide support and encouragement: Encourage employees to share their ideas and suggestions, and provide support and resources to implement these ideas.

(2) Strengthen the professional awareness of faculty and staff; a. Establish a career development plan: Provide faculty and staff with a detailed career development plan, allowing them to have a clear understanding of their career goals, what abilities and skills they need to possess, and how to achieve their career goals. This helps faculty and staff to have a clearer understanding of their career development direction and path. b. Provide vocational training opportunities: Provide vocational related training and training opportunities for faculty and staff to enhance their professional skills and professional literacy. This can help them better understand their professional roles and responsibilities, as well as how to better fulfill their responsibilities.

(3) Establishing a career evaluation mechanism: Establishing a scientific career evaluation mechanism for faculty and staff can help them understand their professional level and development potential. This can motivate faculty and staff to continuously improve their professional literacy and skills, in order to achieve higher professional levels.

(4) Strengthen professional ethics awareness: Improve the professional ethics awareness of teaching staff, so that they have a clear understanding of their professional responsibilities and obligations. This can help faculty and staff better fulfill their responsibilities, improve professional literacy, and enhance professional confidence.

(5) Encourage professional communication and sharing: Provide a platform for faculty and staff to learn, exchange, and share professional experiences with each other. This can help faculty members better understand their professional roles and responsibilities, as well as how to better fulfill their responsibilities.

(6) Provide rewards and recognition: Provide rewards and recognition to encourage employees' motivation and enthusiasm for innovation.

(7) Establish an open and inclusive culture: Establish an open and inclusive campus culture, and make different management methods based on the characteristics of different faculty and employees. Developing different management methods based on the characteristics of different teaching staff can better stimulate their enthusiasm and work enthusiasm.

In short, we should focus on scientific and humanistic management to enhance the professional identity of teaching staff. The professional identity of teaching staff is the internal driving force for teacher development, which can promote their dedication, diligence, and creativity in teaching, research, and other work. This not only relates to the growth and progress of teaching staff in the industry, but also relates to talent cultivation and scientific research progress.

Introducing a combination of work motivation and humanistic care in school organizational management to create a positive, collaborative, and emotional work environment. At the same time, paying attention to the internal needs of faculty and staff, ensuring a steady increase in income levels, and improving their security measures in housing, medical care, children's education, elderly care, etc., university managers should strengthen guidance on career planning for faculty and staff, actively carry out work training and academic exchange activities, guide them to form good habits of self reflection in work practice, and enhance their level of professional identity and career development.

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