Empirical Study on the Competency Model of Applied University Faculty

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Abstract: The primary objective of this research is to identify the factors that influence faculty competency of applied universities which can be used in the recruitment, training, and evaluation of faculty to improve the overall performance of the university. The research questions and objectives are determined based on literature research. Based on Behavioral Event Interview and literature research, the hypotheses of faculty competency model was established and verified the model with multiple regression method by data analysis of SPSS and AMOS. Data are collected from the internet on a sample of 396 faculty members in applied university in China.

The result of this research indicates that student-oriented, achievement motive, professional ability, and vocational ability four factors have positive influences on the applied university faculty competency. One of the limitations of the study is that the sample dispersed across the country, so we cannot get the regional or industrial characteristics of university faculty.

Both managers and developers of applied universities can recognize the importance of the competency model for faculty management and can continuously pay attention to the research and use of the competency model to improve teaching quality. Scholars have also studied the applied faculty competency model in recent years. This study further verifies the proposed theoretical model with empirical methods and provides a new competency model for faculty competency research and faculty management.

1. Introduction

In China, the education goal of the applied universities is higher vocational talents who can gain professional knowledge and skills to social practice. It is different from the research university and the vocational college (Wang, 2014). The applied university develops advanced applied talents for the local economy (Zheng & Wang, 2017). Based on the goal of cultivating applied talents, there are different requirements for the ability of faculty members in applied universities.

At present, many scholars have studied the competency of faculty members in ordinary university (Jia, 2015). However, few researchers focused on the faculty competency in applied university, and the existing research focused on qualitative research, there are few studies based on empirical research (Xi, 2014). Few research results can provide a reference for the management of faculty members in applied universities. Therefore, this study will use the questionnaire to carry out verification, construct the competency model of faculty members, and provide a specific theoretical reference for the faculty members of applied universities.

2. Literature Review

2.1 Conceptualization of Competency

McClelland (1973) defined competency is the individual potential deep characteristics; it can be a motive, characteristics, self-image, attitudes or values, a domain knowledge, cognitive or behavioral skills any can be reliable measurement or count, and can distinguish between excellent

performance significantly from the general performance of the individual characteristics.

Based on the difference in understanding of the concept and characteristics of competency, this research have summarized the competency concept from different aspects:

(1) Competency is the combination of an individual's underlying characteristics, knowledge, skills, attitude, motivation, and behavior at different levels. (2) The definition of competency is within the scope of the job, which can be reflected through behaviors in work. (3) Competency is a relatively stable behavior which can be described, predicted, and produce high performance. (4) Competency can be improved and developed through training or learning. The author confirm the definition of competency as follows:

Competency is the key factors that can distinguish high performance from low performance. The main elements are dominant characteristics such as knowledge, skills, attitudes and self-concept, values, traits, and inherent characteristics such as practice experience and motives. Competency is relatively stable, which can be measured, and faculty competency can be improved by training or study.

2.2 Conceptualization of Competency Model

Based on the analysis and research of the competency model, the definition of the competency model in this study is the combination of a group of abilities, such as knowledge, skills, ability and personality traits, that can expertly complete a specific type of post or a certain kind of work. These elements must be measurable and extensible, these capabilities have a significant impact on enterprise development and individual performance, and the structure of the competency model should clearly define each competency component, including measurable or observable performance indicators or criteria. These can be used for employee career development and evaluation.

2.3 Conceptualization of Faculty Competency Model

Faculty competency covers many aspects, such as teaching skills, scientific research ability, and personality building. The cultivation of these elements contributes to the professional development of faculty members and is an essential part of faculty development. The two are closely related, and we should put the improvement of competency level into the faculty career development system, they promote each other and develop harmoniously (Yang & Guo, 2018).

This study defines university faculty competency according to a variety of definition. First, the faculty is suitable for teaching jobs with extensive professional knowledge; second, the faculty members have innovation research ideas and research results that can be used to the classroom and service for the society. Thirdly the faculty can motive the student to obtain growth and improve their ability. Finally, the faculty competency can produce an excellent performance of the dominant or recessive cognitive ability, social ability, and complex of meta-ability.

At present, there is little research literature on the competency model of faculty members in applied universities in China, and no general competency model has been formed yet (Li, 2018).

3. Research Design

This research will establish a theoretical framework about the competency of the faculty based on relevant research experience and select six educational experts who carry out the interview. The study will analyze the collected questionnaires data and identify the dimensions of faculty competency and use regression analysis to verify the model of the faculty competency.

3.1 Theoretical Framework

Based on literature analysis, the main influencing factors of the applied faculty competency are demographic variables such as gender, age, education age, education level, job title, and subject specialty. Personal traits such as work attitude, individual achievement motivation, professional competency, and professional knowledge are also the main factors affecting competency. So the theoretical framework is shown in figure 1.

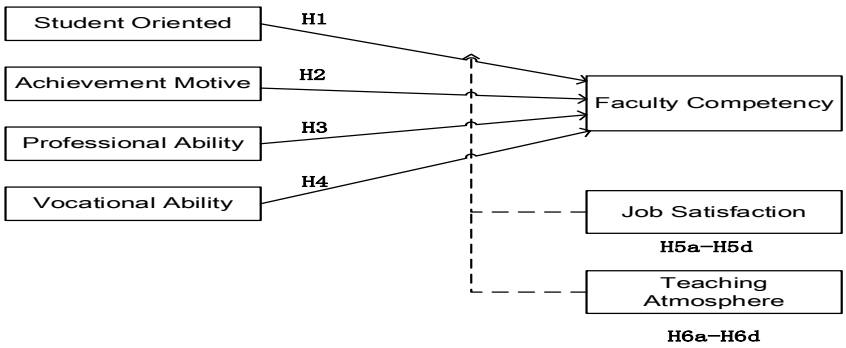

Figure 1. Theoretical framework

3.2 Research Hypotheses

Through the analysis of the above theoretical framework, for applied universities, the following research hypotheses are proposed;

H1: Student oriented has significant relationship on faculty competency.

H2: Achievement motive has significant relationship on faculty competency.

H3: Vocational ability has significant relationship on faulty competency.

H4: Professional ability has a significant relationship on faculty competency.

For applied universities, job satisfaction and teaching atmosphere play a key role in moderating faculty competency. Therefore, the following research hypotheses are proposed.

H5a: Job satisfaction has a moderate effect on the relationship between student oriented and Faculty Competency.

H5b: Job satisfaction has a moderate effect on the relationship between Achievement Motive and Faculty Competency.

H5c: Job satisfaction has a moderate effect on the relationship between vocational ability and Faculty Competency.

H5d: Job satisfaction has a moderate effect on the relationship between professional ability and Faculty Competency.

H6a: Teaching atmosphere has a moderate effect on the relationship between student oriented and Faculty Competency.

H6b: Teaching atmosphere has a moderate effect on the relationship between Achievement Motive and Faculty Competency.

H6c: Teaching atmosphere has a moderate effect on the relationship between vocational ability and Faculty Competency.

H6d: Teaching atmosphere has a moderate effect on the relationship between professional ability and Faculty Competency.

3.3 Unit of Analysis

As the purpose of this study is to explore the factors that influence the faculty competency of the applied university, individuals of applied university faculty as the unit is the best fit for this research. Therefore, there are no restrictions in terms of age, gender, job title, education, and income.

The population of this study is considered to be full professors, associate professors, assistant professors, post-doctor’s degree, doctor’s degree, master's degree, bachelor’s degree, and junior’s degree holders who teach in applied university in different public and private universities in China roughly 100 applied universities across the country. Since the questionnaires are distributed online using national academic QQ and WeChat groups through the questionnaire star, random applied university faculty members who fill out the questionnaires. At least 384 valid questionnaires are collected in this study.

4. Data Analysis

4.1 Questionnaire Reliability Test

The internal consistency coefficient of the overall of the questionnaire was 0.935 (>0.75), with high reliability. The reliability table of the revised questionnaire is shown in table 3.1 below.

Table 1. The reliability coefficient results

Factors	Items	Cronbach's Alpha
Student oriented	7-11	0.785
Achievement motive	12-16	0.750
Vocation ability	17-21	0.821
Professional ability	22-26	0.828
Job satisfaction	27-38	0.875
Teaching atmosphere	39-44	0.887
Faculty Competency	45-50	0.865

4.2 Confirmatory Factor Analysis

When the reliability of each factor and the overall reliability of the questionnaire meet the requirements, the questionnaire collection will continue. A total of 424 questionnaires will be collected through the questionnaire, among which 396 are valid.

Before the confirmatory factor analysis, the KMO of the sample was 0.902, the Bartlett s sphericity test was 1849.981, and the probability P=0.000(<0.05) was less than the significance level. According to the KMO measurement standard provided by Kaiser, the original variable was suitable for factor analysis. The result is shown in table 2 below.

Table 2. KMO and Bartlett's test result

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.902
Bartlett's Test of Sphericity	Approx. Chi-Square	1849.981
	df	171
	Sig.	.000

In the factor analysis process, 396 samples were used. Factor analysis in the process of deleting items together degree is low and the factor loading value project, at the same time, adopt the maximum variation factor for rotating orthogonal method, to extract the characteristic value is greater than 1 of 4 factors, cumulative variance contribution rate is 61.950. According to the result of factor analysis, invite the expert inside course of study to evaluate the content and meaning of each project and correction, and the results are summarized, finally, it is concluded that a total of 20 formal questionnaires of the project.

4.3 Exploratory Factor Analysis

In order to test whether the measurement items could do factor analysis or not that we should do parameters test first before the Exploratory Factor Analysis. Data result is as the below Table 3.3. The KMO of the sample was 0.942, the Bartlett s sphericity test was 4125.746, and the probability P=0.000 (<0.05) was less than the significance level. According to the KMO measurement standard provided by Kaiser, the original items were suitable for factor analysis.

Table 3. KMO and Bartlett’s Test result

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.942
Bartlett's Test of Sphericity	Approx. Chi-Square	4125.746
	df	190
	Sig.	.000

By means of principal component analysis, four factors were extracted, which were consistent

with the hypothesis of the theoretical framework. The cumulative variance percent was 62.287.

In this study, the definition of each factor were determined after exploratory factor analysis,, and the competency model of applied university faculty members was confirmed as shown in figure 2.

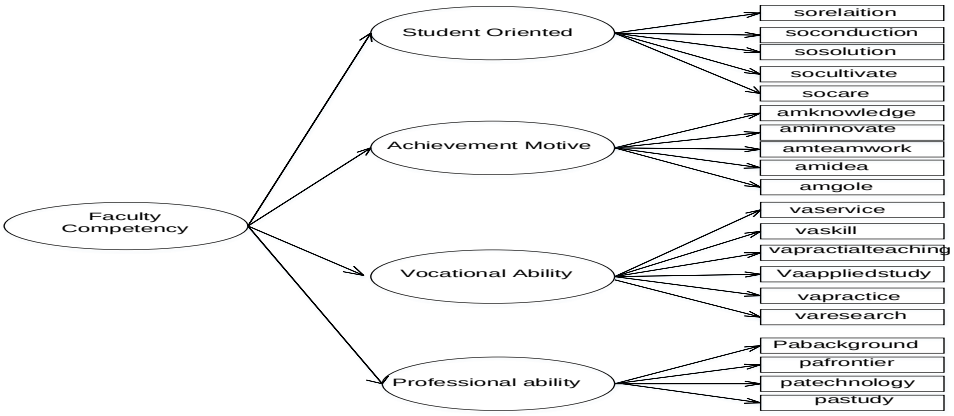

Figure 2. The competency model of applied university faculty

4.4 Confirming Factor Analysis Test

In this section, AMOS will be used to verify the validity of the questionnaire, including convergent validity and discriminant validity.

The results of exploratory factor analysis is shown in figure 3. below.

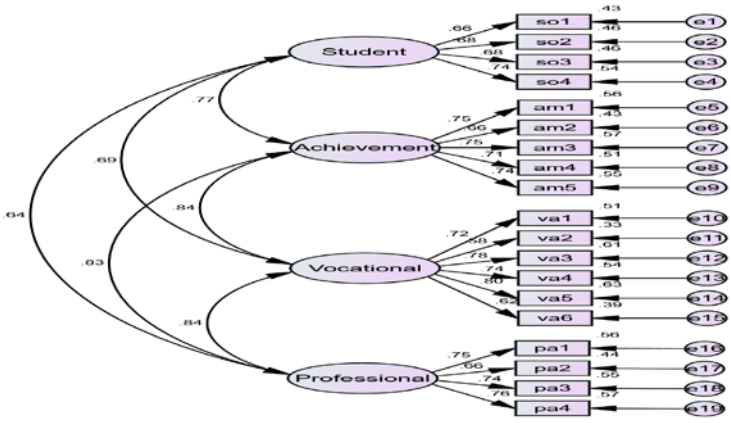

Figure 3. Confirming factor analysis test

According to figure 3. shows that all factors loading are more than 0.50, and most of them more than 0.70, then we can conclude that the theoretical model has good convergent validity; and that all estimates of correlations among exogenous variables aren't equal to 1, then we can conclude that the theoretical model has good discriminant validity.

The variation of GFI, IFI, CFI and NNFI etc. the indicators in measure the model is between 0 and 1. The closer to 1, the better the fitting is. The change interval of RMSEA was also between 0 and 1, but the closer to 0, the better. The critical standard was below 0.08.

In addition, when the value of CMIN/DF is less than 3, it indicates that the model is well fitted, and when it is less than 5, it indicates that the model is acceptable. The result is shown in table 4 below, we can conclude that the model is well fitted.

Table 4. The confirmatory factor analysis results

Fitting Indicators	CMIN/DF	RMR	RMSEA	GFI	AGFI	NFI	TLI	CFI
Fitting standard	<3	<0.05	<0.08	>0.90	>0.90	>0.90	>0.90	>0.90
calculation results	2.690	0.018	0.067	0.903	**0.874**	**0.893**	0.918	0.930

The faculty competency model were identified with Confirmatory Factor Analysis. Hypotheses dimensions were confirmed as dimensions of faculty competency in applied university. Hierarchical regression analyses were used to test the relationship between independent variables and dependent variables, and moderating effects caused by the moderating variables. Results summary of all hypotheses testing is shown in table 5 below.

Table 5. Result summary of hypothesis testing

	Hypotheses	**Results**	**Comments**
H1	SO has significant relationship on FC	Positive relationship	Supported
H2	MA has significant relationship on FC	Positive relationship	Supported
H3	VA has significant relationship on FC	Positive relationship	Supported
H4	PA has significant relationship on FC	Positive relationship	Supported
H5a	Job satisfaction has moderating effect on the relationship between SO and FC	n.s.	Not supported
H5b	Job satisfaction has moderating effect on the relationship between MA and FC	n.s.	Not supported
H5c	Job satisfaction has moderating effect on the relationship between VA and FC	n.s.	Not supported
H5d	Job satisfaction has moderating effect on the relationship between PA and FC	n.s.	Not supported
H6a	Teaching atmosphere has moderating effect on the relationship between SO and FC	n.s.	Not supported
H6b	Teaching atmosphere has moderating effect on the relationship between MA and FC	n.s.	Not supported
H6c	Teaching atmosphere has moderating effect on the relationship between VA and FC	n.s.	Not supported
H6d	Teaching atmosphere has moderating effect on the relationship between PA and FC	n.s.	Not supported

n.s.: No significant relationship

5. Conclusion and Discussion

5.1 The Main Factors of the Faculty Competency

Four main research problems are verified. The results reflect that the four factors of student orientation, achievement motivation, professional ability and vocational ability all significantly affect the competency of applied university faculty members, which verifies the first four hypotheses of this study.

Student-oriented factors have a significant impact on the competency of applied university faculty members. This conclusion is consistent with the opinions of many scholars of the literature review. University education has the dual goal of imparting knowledge and developing talents, while importing knowledge is one of the means to cultivate talent. Tang verified the student-oriented is one of the crucial influence factors of university faculty competency with the empirical method in 2010. He has put forward that faculty members in universities should thrive optimum

growing concern, care and develop to improve students' growth at every step of their growth (Tang et al. 2010). Goh and other scholars believed that faculty members should know how to communicate with students, understand their advantages, disadvantages and potentials, and master their learning needs, in order to become an excellent professional faculty (Goh, 2014).

Achievement motive has a significant influence on the competency of faculty members in applied universities, this conclusion has also been proposed by several scholars (Hu & Shen, 2017). The achievement motivation in this study believes that the achievement desire of applied university faculty members will enable them to learn new knowledge continuously, update teaching concepts in teaching, consistently carry out teaching reform, and reflect the team cooperation ability and professional dedication.

The vocational ability has a significant impact on applied university faculty competency. This result is consistent with the research results of several scholars reviewed in the third chapter. Zheng (2017) and others advocate that while faculty impart knowledge, they should also apply learning to practice. Faculty members through scientific research to provide a high level of service for society and scientific research mainly refers to applied research. Faculty members can use their practical experience to integrate professional knowledge and skills in teaching, the combination of theory with practical instruction could improve students' functional ability (Zheng & Wang, 2017).

The professional ability in this study suggests that faculty members should have practical professional skills and experience, be able to research applied topics, and on this basis, can combine theory with practice for teaching and have the social service consciousness. The professional ability has a significant impact on the competency of faculty members in applied universities. This result is consistent with the research findings of Wu, in which he believed that faculty members should have professional knowledge, professional background and a better understanding of professional courses (Wu, 2009). This study determines that faculty should have a professional educational background, professional frontier knowledge, clear teaching objectives, be able to use modern information technology in teaching, and be interested in professional research.

5.2 Limitation of Study

5.2.1 Samples are too Dispersion

This study used the questionnaire star for data collection. So, the sample size comes from all applied universities in China. Because the faculty members who filled in the questionnaire were all in QQ and WeChat groups. Therefore, the faculty members’ regions and schools can't provide accurate statistics, so the data analysis can’t reflect local characteristics and the characteristics of a particular industry of the university faculty.

5.2.2 No Applied Research of the Model is Involved

The research content of faculty competency gradually attaches importance to the research of model application, showing the trend of trying to link the model with the application. Although the research has an excellent trend to practice, most of the current stay at the level of guiding ideology and the application research of faculty members’ competency model is still the direction of future development. So that more attention should be paid to the practical application of research results on faculty competency in various personnel management, such as training system and recruitment system, to maximize the effectiveness of research results on faculty competency (Li. et al. 2018).This study verified the hypothesis model proposed, and the conclusion mentioned that the model could be applied to faculty recruitment, training and evaluation, but no specific practical application research was carried out.

5.3 Future Directions of Research

5.3.1 Research on a specific region or industry

In this study, samples are from across the country, and the research results cannot reflect regional characteristics. However, the development of application-oriented universities in different regions of China has their own characteristics, and teachers' abilities are reflected differently in different

industries. Therefore, future research courses will study the competence of teachers in a certain region or industry, providing a more detailed reference for the development and management of teachers in the region or industry.

5.3.2 Research on the Application of the Model

The research on competency has practical guiding significance for both university administrators and university teachers. According to the competency model, teachers can objectively evaluate themselves, and then adjust themselves in teaching and scientific research to purposefully carry out capacity building. The competency model of college teachers plays a guiding role in the two core links of college teachers' recruitment and selection and performance evaluation. The application of competency model is the focus of future research.

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