

Full Length Research Paper

A study on the relationship between teacher competency and job performance under human resource management in higher education

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This study aimed to investigate the effects of Jiangsu University teachers' competency and engagement on their job performance and determine whether teacher competency affects job performance through the mediating role of engagement. We constructed a theoretical model based on self-determination theory (SDT) and the job demand–resource model and validated it using structural equation modeling (SEM). The study sample comprised teachers from 8 types of undergraduate colleges and universities in Jiangsu Province, China. Three hundred and fifty-four university teachers were surveyed using the Teacher Competency Scale, the Utrecht Work Engagement Scale, and the Job Performance Scale. The results showed a significant positive effect of university teachers' competency on their engagement and job performance. Additionally, SEM analysis showed a partial mediation effect of engagement in the relationship between teacher competency and job performance. The findings not only enrich our understanding of the mechanisms underlying the relationship between university teachers' competency and job performance but also extend the scope of SDT and suggest practical discussions and recommendations.

Key words: University teacher, competency, engagement, job performance.

INTRODUCTION

The State Council of the Central Committee of the Communist Party of China's *Opinions on Comprehensively Deepening the Reform of Teaching Force Construction in the New Era* (2018) states that highly competent teachers are the foundation of high quality educational development, that teacher quality and

level influence the educational effect, and that teachers bear the burden of training socialist builders and successors (Li, 2018; Antoniou and Kyriakides, 2013; Li et al., 2018). Teacher ability refers to the ability of teachers to go all out to achieve goals and actively exert their own inner potential and initiative in teaching (Xue et al., 2023),

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which is an intrinsic motivation for teachers' development (Valsiner and Van der Veer, 2000). Moreover, the individual teacher competency level determines the entire teaching force's competency level (Armstrong and Taylor, 2009; Bibi, 2005). Additionally, in the process of new-era organizational development, comprehensive improvement of human resource management (HRM) has become key for organizations to obtain a comprehensive competitive edge (Bednall et al., 2014). Human resources refers to the sum of physical and mental resources that people have to contribute to the creation of value and can be utilized by the organization (Armstrong and Taylor, 2009). As universities' most important and core human resources, teachers' overall quality, teaching performance, research performance, and social service ability profoundly impact universities' education level and the quality of talent cultivation (Taylor and Tyler, 2012; Xu and Ye, 2014; Yan et al., 2022). Competency assessment is the theoretical foundation of and an important tool for HRM (Rajpal, 2016; Katz and Raths, 1985). Constructing a competency model is fundamental to addressing constituent issues of the HRM process such as recruitment, selection, talent cultivation, performance management, and payroll management (Pantić and Wubbels, 2010). Competency model, that is, as a fixed role needs to have the characteristics to be able to complete the task well, can be said to be a kind of competency characteristics for the performance of fixed positions to seek integration (Anitha and Reema, 2014).

Competency model can provide a scientific, complete and successful model for a given level, job or role. It reflects all the necessary behaviors, skills and knowledge to influence an individual's success in a given job and is often used as a tool in a given workplace (Mathis et al., 2015). Construction of a competency evaluation index system can facilitate the efficient implementation of various tasks in all HRM subsystems, thus improving an organization's overall competitiveness (Zhang et al., 2021).

Competency and engagement have constituted a hot topic in the field of organizational behavior and HRM for over two decades, and teacher engagement is a key to improving teachers' core competencies (Li et al., 2021; Salmela-Aro and Upadyaya, 2018). Improving engagement goes hand in hand with improving job performance in terms of teacher competencies (Xue et al., 2023). Job performance is influenced by a variety of factors including the organizational environment, the nature of the job, job competencies, job engagement, and certain personal characteristics (Sheldon and Filak, 2008). Teacher engagement is closely related to a university's performance (Runhaar et al., 2013). Teachers' ability to devote themselves to their work and demonstrate a high level of engagement is a direct influence on a school's performance (Huang et al., 2022) because it creates a clear link between individual performance and organizational strategic goals (DeNisi and Sonesh, 2011).

Self-determination theory (SDT; Deci and Ryan, 1985) is a theoretical framework that emphasizes the importance of satisfying the psychological need for well-being to optimal performance. SDT posits that individuals have three basic psychological needs: autonomy, competence, and relatedness (Deci and Ryan, 2000). Satisfying these psychological needs is essential for psychological growth, optimal competency, and well-being. Hence, much SDT research has focused on the factors that facilitate or hinder satisfaction of these needs (Deci and Ryan, 2000). Historically, empowering teachers has been widely recognized as one of the most important solutions to teachers' problems (Melenyzer, 1990) including job satisfaction, burnout, and poor job engagement (Zhang et al., 2021). According to SDT, teachers, as professionals, should be given greater autonomy and freedom, and meeting their basic psychological needs can unlock greater capacity (Klaeijssen et al., 2018), allowing them to, in turn, positively influence their students (Klassen et al., 2012), which would ultimately produce higher teacher job performance (Wahyuddin, 2016). For example, previous research has shown that teachers' perceptions of autonomy positively predict their professionalism (Koneremann, 2012) and teaching self-efficacy (Korthagen and Evelein, 2016).

However, currently, personnel management in universities lacks development strategies, systematic human resource planning, a comprehensive professional behavior evaluation system, an efficient training and development system, and an effective and scientific performance appraisal system that could lead to optimal performance (Xu and Ye, 2015).

Therefore, there exists relative lag regarding concepts related to constructing a teaching force as well as a lack of in-depth research on and an accurate understanding of the new situation and the new problems universities are facing in market economy conditions (Yang and Khairuddin, 2022). This has led to various drawbacks for faculty management in terms of content, incentive means, and management methods and objectives; additionally, faculty management has shown an inability to adapt to people-oriented requirements (Rajpal, 2016). Using competency as an entry point to explore the path to enhancing HRM has recently become an important tool in management and education (Bednall et al., 2014; Zhang et al., 2021). Therefore, this study proposed a teacher competency model to assess teachers' job performance and examine the impact of teacher competency on job performance. This study investigated the relationship between university teachers' competency and their engagement and job performance and analyzed university teachers' psychological needs and behavioral performance. This paper suggests adopting management and service approaches that suit university teachers' needs to promote their professional development and self-diagnosis toward improving their job performance (Runhaar et al., 2013) and enhancing universities' overall

performance/quality, core competencies, and innovation development (Greguras and Diefendorff, 2009; Pantić and Wubbels, 2010).

LITERATURE REVIEW

Competency and job performance

Teacher competency is the foundation of teachers' educational work, the basis for school recruitment and performance assessment, and the key to improving and modernizing education (Xue et al., 2023). It is a combination of various competency elements that facilitate the organization and development of teaching (Yang and Khairuddin, 2022; Xue et al., 2023). Drawing on McClelland (1998), teacher competency was defined as individual characteristics that distinguish high performing teachers from average performing teachers in education. Teacher competency is the combination of individual teachers' motivation, self-concept, knowledge, behavior, emotions, and personality traits in a given context (Anitha and Reema, 2014). Once a worker is able to correctly understand their own abilities and becomes aware of the nature of the work environment, more competent performance can be generated; conversely, a worker who is not fully confident in their abilities or is unfamiliar with the nature of the work environment tends to perceive low competency (Phillips et al., 2001).

Using competency models effectively and scientifically can help users identify the competencies needed for their jobs, as well as their job strengths, the weaknesses that need to be corrected and remediated, further learning and development that can be achieved, etc. The iceberg model (McClelland, 1973) and the onion model (Boyatzis, 1991) are two important competency models that demonstrate that Organizational goals can be achieved when individuals possess the necessary competencies (Sandberg, 2000).

Lee et al. (2020) stated that variation in in-service teachers' teaching competencies and performance should be given attention when observing teaching practices (Taylor and Tyler, 2012). Based on Barry and Stewart (1997), job performance was defined as the results of university teachers' activities and behavioral performance regarding fulfilling school teaching, research, and other related tasks in a manner closely linked to their schools' goals (Hwang et al., 2017; Swider and Zimmerman, 2014). Chen and Schaubroeck (2002) concluded that job performance reflects whether a person is effective at what they do or whether they demonstrate good competency. Other studies on the relationship between teacher competency and job performance have confirmed that teacher competency is positively related to job performance (Demir, 2015; Runhaar et al., 2013); that is, the teacher competency level determines individual performance and is a good predictor of individual

performance (Yan et al., 2022). Moreover, Rahmatullah (2016) found that increasing teacher competency effectively improved teacher performance among 150 teachers in Indonesia and that continuous learning and competency improvement resulted in higher teacher performance. Based on the above literature and analysis, this study proposed the following research hypothesis:

H1: University teacher competency significantly and positively contributes to job performance.

Competency and engagement

Vroom et al. (2015) reviewed research on strategies for improving employee performance based on motivation theory and concluded that employee engagement and competency are the main variables of organizational performance and that this relationship between needs and goals can be expressed in a process model as follows: individual effort (competency)—individual achievement (performance)—organizational rewards (compensation)—individual needs. HRM efforts can effectively improve organizational performance through the selection and nurture of teacher competencies and the motivation and development of teacher engagement (Min et al., 2020). Additionally, teacher competency, job enrichment, job role fit, encouragement from colleagues, support from superiors, and availability of job resources all positively impact work commitment (engagement) (May et al., 2004; Maeda et al., 2021; Xue et al., 2023). A satisfying job attracts employees' interest in devoting themselves to their work and investing their efforts in helping the organization achieve its mission (Shuck et al., 2011). Therefore, when employees have relatively rich job tasks and a better job match, these become a driving force that ensures a much higher level of engagement (Laschinger and Leiter, 2006), which helps the organization improve its performance and achieve its strategic goals (Van Niekerk, 2022). Based on the above literature and analysis, this study proposed the following research hypothesis:

H2: University teacher competency significantly and positively contributes to teacher engagement.

Engagement and job performance

Studies have found that the current reasons for low teacher engagement are mainly influenced by school management levels, career development opportunities, benefits, and recognition of teachers' work (Bakker et al., 2007; Levitats et al., 2022). University teachers are the backbone of higher education, and their engagement affects individual teacher job performance (Wang and Chen, 2020). Drawing on Schaufel et al. (2002), we define teacher engagement as the extent to which professional

teachers engaged in teaching and learning are dedicated to their teaching and learning work and thus engage in playing their role (Yao et al., 2022). Teacher engagement is expressed as a cognitive, emotional, and behavioral commitment to teaching and learning (Aldabbas et al., 2021) and as engagement in the profession (Rich et al., 2010). Some researchers have suggested that as engagement increases, employees' emotions, cognitions, and prospective behaviors also positively improve, which can lead to improved job performance (Hakanen and Schaufeli, 2012; Wang and Chen, 2020). Teachers with high engagement have better job performance because they invest more effort in their work, are more focused on their work, have emotional connections with colleagues and leaders that contribute to organizational value behaviors, and have a higher propensity to accomplish job goals (Christian et al., 2011). Based on the above literature and analysis, this study proposed the following research hypothesis:

H3: University teachers' engagement significantly and positively contributes to teachers' job performance.

Mediating role of engagement

Engagement is usually studied using Demerouti et al. (2001) job demand–resource (JD-R) model (Lesener et al., 2018), which proposes that two factors influence employee performance: job demands and job resources. High job demands can trigger health damage, deplete employees' energy, and lead to persistent overload and exhaustion (Bakker and Demerouti, 2017). In contrast, job resources help to achieve job goals, reduce job demands and their costs, and promote growth, learning, and development (Bakker et al., 2011). Job resources evoke a motivational process, promote work engagement, and buffer the harmful effects of work demands (Bakker et al., 2015; Bakker and Demerouti, 2017; Van Wingerden et al., 2017).

Deci and Ryan's (1991) SDT suggests that individuals develop a strong sense of competency in task setting when skills are matched to task requirements, and their intrinsic motivation is influenced by a sense of autonomy in task setting (Sheldon and Filak, 2008). In other words, when internal resources and the social environment, such as job characteristics, employee competency, and engagement in an organization, adequately support and promote individuals' three basic psychological needs (that is, autonomy, competency, and relatedness), individuals' internal motivation is enhanced, encouraging their adoption of adopt positive behaviors that stimulate their potential and promote better job performance (Deci and Ryan, 2000; Ryan et al., 1994). Based on basic psychological needs theory, Ryan and Frederick (1997) showed that the degree to which employees' three basic psychological needs are met is a good predictor of their

performance and the pleasure they derive from the work process. The J-DR model also reflects that, to varying degrees, in the process of intrinsic self-determination, the availability of job resources, that is, the level of support for teachers' work in schools, motivates teachers to work and thus increases their level of commitment (engagement), satisfying their need for autonomy and competency (Shim et al., 2022) and enhancing their willingness to devote their efforts and competencies to fulfilling job tasks. These perceptions and beliefs increase the degree to which individuals are willing to commit themselves to performing their roles (Bakker and Demerouti, 2017; Crawford et al., 2010), ultimately resulting in positive job performance (Levitats et al., 2022; Yao et al., 2022). Additionally, in a study of kindergarten teachers, Li et al., (2021) found that engagement mediated the relationship between self-control and job performance. Based on the above literature and analysis, this study proposed the following research hypothesis:

H4: Engagement has a mediating role between university teacher competency and job performance.

METHODS

Figure 1 shows the hypothetical model.

Research participants and the sampling method

In this study, 360 full-time university teachers from 8 types of colleges and universities in Jiangsu Province were identified for quantitative research data collection using convenience sampling. The 8 schools were selected according to the Jiangsu Province college/university criteria and divided into 3 categories, namely double first-class universities, undergraduate universities, and higher vocational colleges; hence, the sample was representative. The researchers utilized their work connections to enlist the heads of the universities' academic affairs offices and those of the second-level colleges to distribute the questionnaires to full-time teachers. Before questionnaire distribution, potential respondents were informed about the purpose of the study, advised of their rights and interests, and guaranteed privacy and confidentiality. Informed consent was obtained from all participants. The questionnaires were administered online via the Questionnaire Star platform. Participating teachers completed the questionnaires anonymously via a smartphone app. The questionnaires were collected and quantitatively analyzed using SPSS and AMOS. In the pretest stage, 200 questionnaires were distributed to test the questionnaire content's reliability and validity. Mueller (1997) has suggested that a sample size of 200 or more is preferable for stable structural equation modeling (SEM) results, and this study's sample size met the criterion. A total of 360 questionnaires were collected. After invalid questionnaires were deleted, 354 valid questionnaires were screened. The valid response rate was 98.33%.

Table 1 summarizes the respondents' descriptive statistics. Among the university teachers who participated in this study, 157 (44.4%) were males, and 197 (55.6%) were females. Regarding education level, 95 (26.8%) were bachelor's degree holders, 222 (62.7%) were master's degree holders, and 37 (10.5%) were doctoral degree holders. Regarding years of teaching experience, 143 (40.4%) had less than 5 years of teaching experience, 51

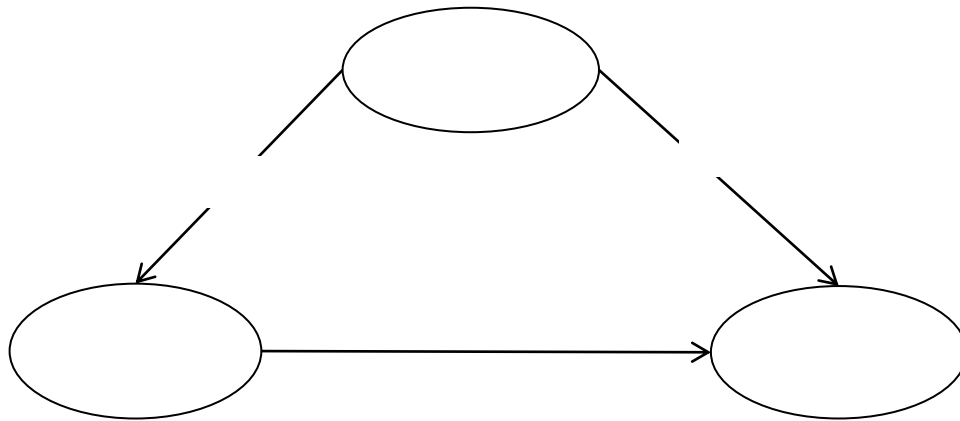


Figure 1. Hypothetical model.
Source: Author

Table 1. Descriptive statistical summary table ($n=354$).

Variable	Category	Number	Percent
Gender	Man	157	44.4
	Woman	197	55.6
Education background	Bachelor	95	26.8
	Master	222	62.7
	Doctor	37	10.5
Educational experience	Less than 5 years	143	40.4
	5-10 years	51	14.4
	More than 10 years	160	45.2
Type of school	"985", "211"	17	4.8
	Undergraduate university	141	39.8
	Higher vocational college	196	55.4
Professional title	Teaching assistant	126	35.6
	Lecturer	142	40.1
	Associate professor	72	20.3
	Professor	14	4

Source: Author

(14.4%) had 5-10 years, and 160 (45.2%) had over 10 years. The distribution of teachers across universities designated as "985" and "211" institutions, undergraduate universities, and higher vocational colleges was 17 (4.8%), 141 (39.8%), and 196 (55.4%), respectively.

Regarding occupational position, 126 (35.6%) participants were teaching assistants, 142 (40.1%) were lecturers, 72 (20.3%) were associate professors, and 14 (4%) were professors.

Research tools

The teacher competency questionnaire was developed by combining Shinkfield and Stufflebeam's (2012) and Judd and Kenny's (2010) competency scales. The resultant scale consists of 25 questions on four dimensions, namely basic competency,

teaching competence, scientific research competence, and innovation competence. It is scored on a 5-point Likert scale. An example item is "I am able to control my emotions and remain calm in the face of stress and challenges." Item analysis of the pretest sample showed that (a) all items' composite reliability (CR) values exceeded 3, (b) the correlation coefficient of one item (a1) on the basic competency dimension on the summative scale was below 0.4, and (c) the pretest sample's Cronbach's α increased after deleting this item. The item analysis results met the item removal criteria (Nunnally and Bernstein, 1994). Therefore, Item (a1) was removed, and the remaining 24 items comprised the formal test. In the formal test, the summative scale's Cronbach's α was 0.938, which was greater than 0.7 (Nunnally, 1978); the confirmatory factor analysis (CFA) results showed that the standardized factor loadings ranged from 0.612 to 0.845, both of which were greater than 0.5 (Hair et al., 1992). Therefore, the scale had good reliability and validity. The

Table 2. Confirmatory factor analysis of teacher competency ($n=354$).

Variable	Item/estimate	R ²	Cr	Ave	Smr	Pgfi	Cfi	Nfi	Pnfi
Basic competency	A2(0.624)	0.389	0.787	0.427					
	A3(0.644)	0.415							
	A40(.615)	0.378							
	5a(0.612)	0.375							
	A6(0.761)	0.579							
	A7(0.828)	0.686							
Teaching competency	A8(0.745)	0.555	0.913	0.602					
	A9(0.791)	0.626							
	A10(0.843)	0.711							
	A11(0.804)	0.646							
	A12(0.712)	0.507							
	A13(0.693)	0.480							
Research competency	A14(0.691)	0.477	0.868	0.569	0.057	0.655	0.871	0.836	0.745
	A15(0.748)	0.560							
	A16(0.796)	0.634							
	A17(0.845)	0.714							
	A18(0.678)	0.460							
	A19(0.754)	0.569							
Innovation competency	A20(0.658)	0.433	0.900	0.563					
	A21(0.759)	0.576							
	A22(0.767)	0.588							
	A23(0.819)	0.671							
	A24(0.716)	0.513							
	A25(0.768)	0.590							
Reference value	>0.500	>0.400	>0.600	>0.500	<0.080	>0.500	>0.800	>0.800	>0.500

Source: Author

model fit results are shown in Table 2, indicating a good model fit for this scale (McDonald and Ho, 2002).

Regarding Schaufeli and Bakker's (2003) Utrecht Work Engagement Scale (UWES), Schaufeli has suggested examining the three dimensions of engagement, energy, and focus as a single dimension because they are highly correlated with one another. Therefore, this study used a simplified version of the 9-item UWES to measure engagement as a whole. Scoring was on a 5-point Likert scale. An example item is "I feel energized at work." Item analysis of the pretest sample showed that (a) all items' CR values exceeded 3, (b) the correlation coefficients between the items and the summative scale were greater than 0.4, and (c) Cronbach's α did not increase after items were removed. The above item analysis results supported the retention of all items, leading to retention of all items comprising the scale for formal testing. Regarding the formal test sample, the summative scale's Cronbach's α was 0.903, which was greater than 0.7; the CFA results indicated that the standardized factor loadings ranged from 0.515 to 0.808, all of which were greater than 0.5. Therefore, the scale had good reliability and validity. The model fit results are shown in Table 3, indicating good model fit for this scale.

The job performance questionnaire was developed by combining Allworth's (1997) and Borman and Motowidlo's (1997) job performance scales. The resultant scale consists of three dimensions, namely task performance, relational performance, and adaptive performance. The scale comprises 18 questions rated on a 5-point Likert scale. An example item is "I take the initiative to conduct research and complete school research tasks." Item

analysis of the pretest sample showed that (a) all items' CR values exceeded 3; (b) the correlation coefficients of each item comprising the summative scale exceeded 0.4; (c) the factor loadings of four items (c1, c7, c8, c9) in the task performance dimension, one item (c12) in the relational performance dimension, and one item (c15) in the adaptive performance dimension were less than 0.5; and (d) the pretest sample's Cronbach's α increased after deletion of the six aforementioned items. The item analysis results met the criteria for removing these items. Therefore, the six items mentioned in (c) were removed, and the remaining 12 items were used in the formal test. The summative scale's Cronbach's α in the formal test was 0.874, which was greater than 0.7; the CFA results showed that the standardized factor loadings ranged from 0.501 to 0.863, all of which were greater than 0.5. Therefore, the scale had good reliability and validity. The model fit results are shown in Table 4, indicating good model fit for this scale.

RESULTS

SPSS 25.0 and AMOS 23.0 statistical software were used. Firstly, validation factor analysis was conducted for each scale to test the study variables' validity; secondly, descriptive statistics and Pearson correlation analysis were conducted regarding the study variables and their dimensions; thirdly, common method variance (CMV) was

Table 3. Confirmatory factor analysis of engagement ($n=354$).

Variable	Item/estimate	R ²	Cr	Ave	Smr	Pgfi	Cfi	Nfi	Prfi
Engagement	B1(0.777)	0.604	0.909	0.531	0.074	0.500	0.856	0.845	0.634
	B2(0.785)	0.616							
	B3(0.809)	0.654							
	B4(0.779)	0.607							
	B5(0.583)	0.340							
	B6(0.515)	0.265							
	B7(0.770)	0.593							
	B8(0.764)	0.584							
	B9(0.718)	0.516							
Reference value	>0.500	>0.400	>0.600	>0.500	<0.080	>0.500	>0.800	>0.800	>0.500

Source: Author

Table 4. Confirmatory factor analysis of teacher job performance ($n=354$).

Variable	Item/estimate	R ²	Cr	Ave	Smr	Pgfi	Cfi	Nfi	Prfi
Task performance	C2(0.843)	0.711	0.929	0.725	0.038	0.596	0.946	0.928	0.717
	C3(0.830)	0.689							
	C4(0.860)	0.740							
	C5(0.863)	0.745							
	C6(0.860)	0.740							
	C10(0.501)	0.251							
Relational performance	C11(0.800)	0.640	0.782	0.481	0.038	0.596	0.946	0.928	0.717
	C13(0.791)	0.626							
	C14(0.639)	0.408							
	C16(0.704)	0.496							
Adaptive performance	C17(0.795)	0.632	0.803	0.577	0.038	0.596	0.946	0.928	0.717
	C18(0.777)	0.604							
Reference value	>0.500	>0.400	>0.600	>0.500	<0.080	>0.500	>0.800	>0.800	>0.500

Source: Author

detected using Harman's one-factor test; fourthly, the mechanism of the role of engagement in the relationship between university teacher competency and job performance was verified. Bootstrap SEM of the mediation effect and the significance of the regression coefficient ($p < 0.001$) were used as a basis to determine the existence of the mediation effect (Hayes et al., 2017).

Discriminant validity

The factor loadings of the latent variables basic competency, teaching competence, research competence, and innovation competence comprising teacher competency (Table 2) ranged from 0.612 to 0.845; that is, all values exceeded 0.500. CR was 0.787 for basic competency, 0.913 for teaching competence, 0.868 for research competence, and 0.900 for innovation

competence, respectively, with all values exceeding 0.600 (the criterion for good construct reliability). Average variance extracted (AVE) was 0.427 for basic competency, 0.602 for teaching competence, 0.569 for research competence, and 0.563 for innovation competence, respectively. According to Fornell and Larcker (1981), CR should be greater than 0.600, and AVE should reach 0.500 (the ideal criterion), with 0.36–0.50 being the acceptable threshold. Appropriate construct convergent validity can be on the basis of construct reliability alone. The factor loadings of the observed variables for the latent variable engagement with respect to teacher engagement (Table 3) ranged from 0.515 to 0.809; all values exceeded 0.500, and CR was 0.909, which was higher than 0.600 (the criterion for good construct reliability). AVE was 0.531. The latent variable task performance with respect to teacher job performance (Table 4) had a mean variance of 0.531. The factor loadings of the observed variables

Table 5. AVE and correlation coefficients of the study variables ($n=354$).

Variable	1	2	3	4	5	6	7	8
Basic competency	0.653 ^a							
Teaching competency	0.732***	0.776 ^a						
Research competency	0.665***	0.751***	0.754 ^a					
Innovation competency	0.729***	0.784***	0.786***	0.750 ^a				
Engagement	0.426***	0.509***	0.497***	0.501***	0.729 ^a			
Task performance	0.458***	0.570***	0.577***	0.602***	0.575***	0.851 ^a		
Relational performance	0.357***	0.419***	0.425***	0.497***	0.547***	0.690***	0.694 ^a	
Adaptive performance	0.433***	0.450***	0.445***	0.544***	0.562***	0.623***	0.655***	0.760 ^a
M	3.721	3.961	3.770	3.896	3.589	4.017	3.876	3.783
Sd	0.614	0.600	0.635	0.602	0.651	0.569	0.596	0.614

* $p < .05$; ** $p < .01$; *** $p < .001$, ^Asquare root of ave (average variance extracted).

Source: Author

comprising the latent variables task performance, relational performance, and adaptive performance ranged from 0.501 to 0.863; that is, all values were greater than 0.500. CR was 0.929 for task performance, 0.782 for relational performance, and 0.803 for adaptive performance, with all values above 0.600 (the criterion for good construct reliability). AVE was 0.725 for task performance, 0.481 for relational performance, and 0.577 for adaptive performance. Discriminant validity was assessed according to the Fornell-Larcker (1994) criterion, which states that a model satisfies the discriminant validity criterion if the square root of each latent variable's AVE is greater than the correlation coefficient between that latent variable and the other latent variables in the measurement model (Hair et al., 2006). Overall, the university teacher competency model was deemed to have good discriminant validity. As shown in Tables 2-4, the university teacher competency model's absolute fit indices the standardized root mean square residual (SRMR) and the parsimony goodness of fit index (PGFI), its relative fit indices the comparative fit index (CFI) and the normed fit index (NFI), and its parsimonious normed fit index (PNFI) met the reference values, indicating good overall model fit.

Relevant analysis

The descriptive statistical analysis results are shown in Table 5. In this study, the scales for measuring teacher competency, teacher engagement, and job performance were all 5-point Likert scales with a mean of 3. According to the analytical results, the university teachers' mean competency, engagement, and job performance scores were 3.852 ($SD = 0.550$), 3.588 ($SD = 0.651$), and 3.923 ($SD = 0.519$), respectively, with all values exceeding 3, indicating that the university teachers' competency, engagement, and job performance levels were medium to high at the time of the study. As Table 5 shows, the variables' correlation coefficients ranged from 0.357 to

0.786; all reached significance ($p < 0.001$), and there was no covariance. Next, we validated the overall model.

Common method variance

In this study, Harman's one-way test was used to detect CMV, and the data were tested via exploratory factor analysis. The validation results based on un-rotated factor analysis showed a Kaiser-Meyer-Olkin value of 0.946 (> 0.8) and a significant Bartlett test of sphericity ($p < 0.001$). The results indicated that 19 factors had eigenvalues greater than 1; the first factor's variance was 35.601%, which was less than the critical value of 50% set by the method. This indicated the absence of serious CMV in the study variables (Podsakoff et al., 2003).

Next, the single-and multi-factor models were compared via CFA to determine whether there were significant differences in their overall levels of goodness-of-fit, degrees of freedom, and chi-square values. The results showed that the multi-factor model had a higher goodness-of-fit validity than the single-factor model; therefore, CMV was not severe (Hayes et al., 2017). As shown in Table 6, the multi-factor model outperformed the single-factor model in all indicators of overall validity (χ^2/DF , GFI, AGFI, NFI, CFI, SRMR), and comparison of the two models' degrees of freedom and chi-square values showed significant differences ($\Delta\chi^2 = 2436.084$, $\Delta DF = 9$, $p = 0.000$). Therefore, this study was deemed to be free of serious CMV.

Analysis of the overall path model

The overall path model was then analyzed with respect to university teachers' competency, engagement, and job performance. Hair et al. (2006) proposed model fit test refers to measures of absolute fit, incremental fit measures, and parsimonious fit measures. Regarding the absolute fit measures, $\chi^2 = 2954.234$, $df = 936$, χ^2/df

Table 6. Difference between the single-factor and multi-factor models.

Model	Reference value	Multi-factor model	Single-factor model
X ²	/	2954.234	5390.318
Df	/	936	945
X ² /df	<5.00	3.156	5.704
Gfi	>0.800	0.706	0.462
Nfi	>0.800	0.761	0.563
Rfi	>0.800	0.747	0.543
Ifi	>0.800	0.823	0.610
Nnfi	>0.800	0.812	0.590
Cfi	>0.800	0.822	0.608
Pnfi	>0.500	0.719	0.538
Pgfi	>0.500	0.638	0.422
Pcfi	>0.500	0.777	0.581
Srmr	<0.080	0.072	0.099
Rmse	<0.080	0.078	0.115

Source: Author.

=3.156, which met the criteria of $\chi^2/df < 5$, RMSEA = .078; SRMR = .072, which was below 0.08 (Hu and Bentler, 1999); GFI = 0.706, RFI = 0.747, which was close to the 0.8 criterion and thus acceptable (Doll et al., 1994). Regarding the incremental fit measures, CFI = 0.822, IFI = 0.823, NNFI = 0.812, which met the 0.8 criterion. Regarding parsimonious fit measures, PNFI, PGFI, and PCFI were 0.719, 0.638, and 0.777, respectively, with all values exceeding 0.5 (Jodie and Ullman, 2006). The analysis indicated good overall model fit, facilitating overall model analysis.

Regarding the overall model's direct effects, as can be seen in Figure 2 and Table 7, teacher competency significantly and positively predicted engagement, and the path coefficient was 0.622 ($t = 9.648$, $p < 0.001$), indicating that higher teacher competency means higher job engagement. Moreover, teacher competency positively and significantly predicted job performance, with a path coefficient of 0.470 ($t = 6.683$, $p < 0.001$), indicating that higher teacher competency means higher job performance. Additionally, engagement positively and significantly predicted job performance, with a path coefficient of 0.449 ($t = 6.685$, $p < 0.001$), indicating that higher job engagement means higher job performance. Therefore, H1–3 was verified.

In this study, the indirect effect was analyzed by referring to standard bootstrap SEM of the mediated effect. First, N samples were randomly selected from the available data, and if N was 5, then 100 repetitions were performed to obtain a sample of 500; the more times repetitions were performed, the closer the distribution of the repetitions to the original distribution. Some studies have indicated that at least 1,000 repetitions are required to calculate the confidence interval (CI; Efron and

Tibshirani, 1993). If the indirect effect does not contain 0 in the 95% CI and reaches a significant level, then a mediating effect exists (Mackinnon, 2008); if the direct effect contains 0 in the 95% CI, then the direct effect is not significant and is fully mediated. Indirect and direct effects not containing 0 in the 95% CI meet the criterion for significance; a total effect not containing 0 in the 95% CI meets the criterion for significance for partial mediation (Tsai et al., 2014). The specific analysis performed in this study is presented in Table 7.

Analysis of the mediating effect, as shown in Figure 2 and Table 7, indicated that the indirect effect of teacher competency on job performance through the variable of engagement was 0.279 (0.622×0.449). The CI [0.123, 0.444] did not contain 0 ($p < 0.001$). The total effect of engagement between teacher competency and job performance was 0.749 ($0.470 + 0.279$), and the CI [0.565, 0.905] did not contain 0 ($p < 0.001$). All its paths were positive, and the indirect effect was 37.3%. Among the direct effects, the direct effect of teacher competency on job performance was 0.470, and the CI [0.175, 0.765] did not contain 0 ($p < 0.001$), indicating a partially mediating effect of engagement in the relationship between teacher competency and job performance. Therefore, based on the model validation results, the study found that teacher competency enhanced teachers' job performance through engagement in universities in Jiangsu Province; hence, H4 was verified.

DISCUSSION

Based on the results of this study, it was found that teacher competency not only had a significant direct effect

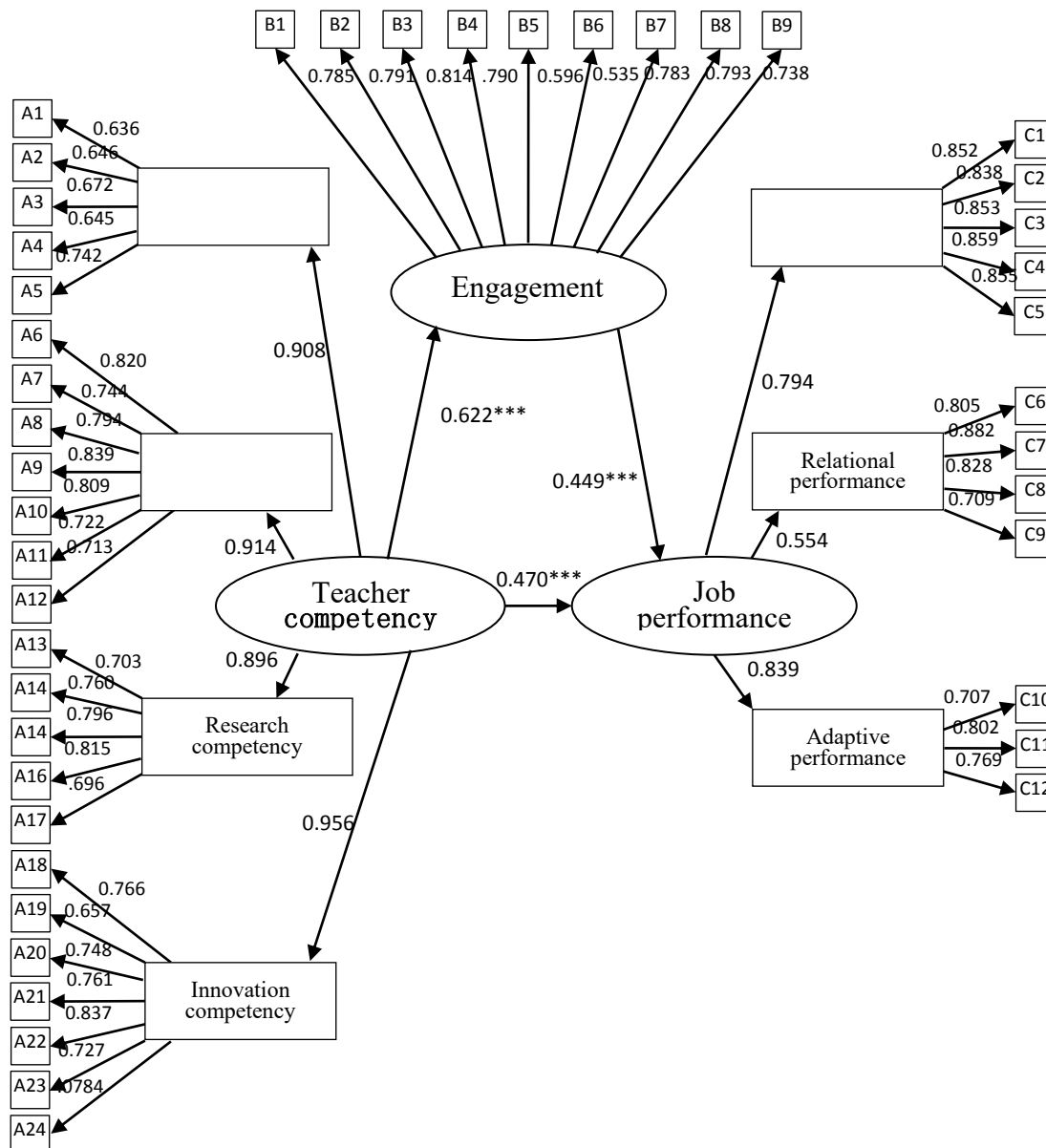


Figure 2. Map of sem paths.
Source: Author

on the university teachers' job performance but also indirectly affected job performance through the mediating effect of engagement. Moreover, the significant increase in the mediation model's explanatory power indicated that the two variables of teacher competency and engagement can more comprehensively explain university teachers' job performance.

Competency and job performance

The results of this study confirmed H1, as the correlation analysis results in Table 5 showed a significant and

positive relationship between teacher competency and its dimensions with teacher job performance, with each dimension significant at the 0.001 level.

Hence, the stronger university teachers' competency is, the better their job performance. Based on this, the authors conducted SEM and found a predictive effect of teacher competency on teacher performance; further, teachers can influence their performance through the various competency dimensions they possess. This is consistent with the findings of Rahmatullah (2016) and Yan et al. (2022), which indicate that basic competency and teaching competence are the basic competencies necessary for a teacher and that they reflect university

Table 7. Bootstrap sem analysis of total, direct, and indirect effects.

Effect	Estimate	P-value	Confidence interval
Direct effect			
Teacher competency→engagement	0.622	< 0.001	[0.489,0.733]
Teacher competency→job performance	0.470	< 0.001	[0.175, 0.765]
Engagement → job performance	0.449	< 0.001	[0.166, 0.704]
Job performance → adaptive performance	0.839	< 0.001	[0.746, 0.920]
Job performance → relational performance	0.554	< 0.001	[0.493,0.614]
Job performance → task performance	0.794	< 0.001	[0.713, 0.869]
Indirect effect			
Teacher competency → job performance	0.279	< 0.001	[0.123, 0.444]
Teacher competency → adaptive performance	0.629	< 0.001	[0.471, 0.766]
Teacher competency→ relational performance	0.415	< 0.001	[0.323, 0.502]
Teacher competency → task performance	0.594	< 0.001	[0.442, 0.723]
Total effect			
Teacher competency → job performance	0.749	< 0.001	[0.565, 0.905]
Teacher competency → adaptive performance	0.628	< 0.001	[0.471, 0.766]
Teacher competency→ relational performance	0.415	< 0.001	[0.323, 0.502]
Teacher competency→ task performance	0.594	< 0.001	0[.442, 0.723]

*p<.05 **p<.01 ***p<.001.

Source: Author

teachers' personal qualities; further, the research and innovation competences refer to the competencies needed for research innovation, stress resistance, and engagement. University teachers with these competencies will comprehensively boost their job performance by constantly exploring and improving research quality as well as by innovating through scientific research. This finding supports SDT's assertion that an individual's need to increase their competency significantly impacts their relational needs and the satisfaction of their basic needs (Deci and Ryan, 2002). Specifically, the level of school support for teachers' work can motivate teachers to work and thus increase their engagement level, satisfying their need for autonomy and competency and increasing their willingness to invest effort and competency into their work tasks (Bakker and Demerout, 2017) and ultimately resulting in positive job performance (Levitats et al., 2022).

Competency and engagement

The results of this study confirmed H2. The correlation analysis in Table 5 shows a significant and positive correlation of teacher competency and all its dimensions with teachers' job engagement at the 0.001 level. Hence, the stronger teachers' competency is, the higher their work engagement. SEM revealed that teacher competency is a predictor of teacher engagement and that teacher can influence engagement through the various competency dimensions they possess. This is consistent with the findings of Laschinger and Leiter

(2006) and Niekerk (2022), which suggest that teacher competencies are attributes inherent to the job itself. Specifically, a satisfying job attracts teachers' interest and encourages university teachers to show behavioral and psychological identification with their school and their job. This leads to their engagement with and commitment to their school's mission. This finding supports the theoretical foundation of the J-RD model, which suggests that teachers are motivated when there is persistent matching between their motivational, emotional, or stress responses and the job resources available to their school (Demerouti et al., 2001).

Specifically, the degree to which a school supports teachers' work and gives them the resources to do it directly determines teachers' engagement, and when teachers are given more of the resources that they need to do their jobs, they will work harder, be more committed, and show higher engagement (Maeda et al., 2021).

Engagement and job performance

The results of this study confirmed H3. The correlation analysis in Table 5 shows a significant and positive relationship of teacher engagement with teacher performance and its dimensions at the 0.001 level. Hence, the stronger teachers' engagement is, the higher their job performance. Based on this, we used SEM to reveal the predictive effect of teacher engagement on teachers' job performance and also found that teachers can influence their job performance through the various dimensions of engagement they possess. This is consistent with the

findings of Wang and Chen (2020) and Christian et al. (2011), which indicate that the greater teachers' engagement with their work, the higher their task, relational, and adaptive performance; those scholars also found that enhancing teacher engagement is conducive to improving teachers' job performance. This finding supports the theory upon which the J-DR model is premised, which suggests that job requirements require teachers to be cognitively, psychologically, and physically engaged in their work, and job resources provide teachers with the resources they need to perform at work (Shuck et al., 2011). Specifically, when teachers have a great deal of autonomy at work, are able to maintain positive emotions, and receive support from leaders, colleagues, and the organization, they are more likely to achieve individual job tasks. This, in turn, increases their satisfaction with and loyalty to the organization, generating higher organizational engagement and enhancing job performance (Wang and Chen, 2020; Yao et al., 2022).

Mediating role of engagement

The findings of this study confirmed H4. This study examined the relationship between teacher competency and engagement and job performance and explored the mediating role of engagement in the effect of teacher competency on job performance through SEM analysis. The SEM results shown in Figure 2 and the bootstrap analysis presented in Table 7 confirmed the partially mediating role of engagement in the relationship between teacher competency and job performance; that is, teacher competency indirectly influenced job performance through engagement among university teachers in Jiangsu Province. This finding is consistent with previous studies (Aldabbas et al., 2021; Li et al., 2021) that found that the higher university teachers' competency, the higher their engagement level and the better their job performance. This suggests that an effective management mechanism that combining teacher competency and enhanced teacher engagement would allow teachers to fully utilize their talents at the highest level of engagement and thus achieve the best performance (Min et al., 2020). The results of this study support SDT, which suggests that motivation level can significantly impact an individual's cognition, emotion, and behavior (Deci & Ryan, 2002; Sheldon & Filak, 2008). Specifically, when internal resources and the social environment comprising job characteristics, competency, and engagement in an organization adequately support and promote individuals' three basic psychological needs (i.e., autonomy, competence, and relatedness), individuals' internal motivation will be enhanced, encouraging them to adopt positive behaviors and thus stimulating their potential and promoting better performance (Deci and Ryan, 2000; Ryan et al., 1994).

This result not only illustrates the importance of teacher competency (competence) as a basic psychological need factor for individuals in terms of university teachers' engagement and job performance but also emphasizes that engagement (autonomy) is a critical basic psychological need factor that leads to higher job performance (relatedness).

CONCLUSION AND RECOMMENDATIONS

Based on the Chinese context, this study took university teachers in Jiangsu Province as research subjects and used teacher competency as the entry point to construct a conceptual model of the relationship between university teacher competency and engagement and job performance. The authors proposed four research hypotheses and, through SEM, verified that, in Jiangsu Province, university teacher competency directly affects job performance. The study also found that engagement plays a mediating role between teacher competency and job performance. Furthermore, this study found close relationships among teacher competency, teacher engagement, and job performance and noted that these factors can influence each other, necessitating implementation of effective measures to coordinate the interrelationships. Through theoretical analysis and empirical research, we found that higher teacher competency positively impacts the cultivation of university teachers' engagement and the improvement of their job performance level. Moreover, analysis of the mediation effect confirmed the predictive role of teacher competency and engagement on job performance, providing a means for colleges and universities to better manage their work and enhance organizational performance, which is consistent with the modern organizational behavior view. Therefore, we propose the following recommendations, considering university teachers' and educational organizations' actual situation.

Improve university teacher competency standards and promote university teacher development

A competency-based compensation management system can forge a closer relationship between university teachers' competency behavior and performance pay and provide a scientific basis for HRM, including university teacher recruitment and allocation, training and development, and compensation management. Therefore, universities can base teacher selection, recruitment, training, and evaluation and assessment on the teacher competency evaluation system and its relationship with job performance and pay attention to the long-term matching of university teachers' professional competency and their positions as opposed to only looking at the short-term degree of match. Furthermore, universities can formulate a planned human resource development

strategy for university teachers and achieve balance and coordination between university teachers' short-term contributions and the organization's long-term development plan. This will allow truly excellent and outstanding teachers to stand out, thus promoting university teacher development.

Provide a good working environment that enhances teachers' engagement and motivates them to be competent in their work

Teachers' basic work consists of teaching and scientific research; such work directly affects teachers' teaching performance and their scientific research performance. Hence, college and university management should provide a good working environment that helps teachers retain their enthusiasm and encourages them to devote themselves to their work. The working environment should also stimulate teachers' potential to match their personal abilities with their teaching positions to give full play to their maximum value. This is the only way to greatly improve university teachers' overall engagement level. Universities also need to give full play to the effectiveness of teachers' HRM and improve their working efficiency. School managers should not only ensure that the school upholds a good organizational culture but should also establish policies suitable for school development as well as teacher development, adopt humanized management methods, pay attention to teachers' working life, and improve the performance assessment system and establish a scientific salary system, etc. Such actions will allow teachers to work without worrying. Additional benefits are an enhanced sense of identity and organizational belonging among teachers, while they vigorously demonstrate their professional dedication. This will enable teachers to improve their job performance and derive self-worth from their work, which will, in turn, encourage them to invest more effort in creating value for their school.

Research limitations and future directions

This study has two major limitations. First, the questionnaire survey was only administered to teachers at 8 universities in Jiangsu Province, China. Future studies may consider expanding the sample's geographical scope. Second, this study was cross-sectional. Although it revealed the predictive relationships between variables, it could not determine their causal relationships. Future research may consider combining longitudinal and experimental studies.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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