

# Job Demands, Resources, and Performance: The Role of Occupational Commitment in China's Construction Industry

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## Abstract

This study examines how job demands, resources, and occupational commitment influence job performance among project-based workers in China's construction engineering supervision industry. Drawing on the Job Demands-Resources (JD-R) model, it explores the mediating role of occupational commitment in the relationship between job characteristics and performance. A total of 744 valid responses were collected through an online survey platform and analyzed using structural equation modeling. The results show that obstructive demands, such as job alienation and underemployment, negatively affect job performance by diminishing occupational commitment. Conversely, challenging demands, like perceived algorithmic control, enhance both commitment and performance. Furthermore, job resources such as social support, information system quality, and job autonomy have a positive influence on job performance. These findings emphasize the importance of managing job demands and optimizing resources to improve employee performance and commitment in project-based work environments. The research contributes to the JD-R model by extending its application to project-based workers and provides practical implications for human resource management in dynamic industries.

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**Keywords:** *JD-R model; project-based workers; job performance; occupational commitment; job demands; job resources.*

## 1. Introduction

### 1.1 Background and Significance of the Study

The construction engineering supervision industry in China has been undergoing significant transformation in recent years, fueled by the rise of digital technologies and the shift towards sustainable development. This sector plays a critical role in ensuring the quality and efficiency of construction projects, ranging from large-scale infrastructure such as high-speed railways to municipal projects like urban drainage systems. As these projects become increasingly complex and diversified, the demand for skilled and adaptable workers has intensified. Simultaneously, the advent of the gig economy has reshaped traditional employment models, with flexible and project-based work arrangements gaining prominence in the construction supervision industry (Mo & Li, 2022). Project-based workers, a central feature of the gig economy, offer flexibility and

scalability, but they also introduce unique challenges for both employees and employers. These workers often face precarious employment conditions, limited opportunities for skill development, and heightened performance pressures (Zheng & Yang, 2019). As such, understanding the factors that influence their job performance is essential for improving workforce management in this dynamic industry. The Job Demands-Resources (JD-R) model provides a robust framework for examining the interplay between job demands, job resources, and employee outcomes. This study applies the JD-R model to the context of project-based workers in China's construction supervision sector, exploring how job demands and resources influence performance through the mediating role of occupational commitment. By addressing these dimensions, the study contributes to a deeper understanding of workforce dynamics in the construction supervision industry and offers actionable insights for enhancing the effectiveness of project-based work.

### **1.2 Research Problem and Questions**

The gig economy's rapid growth, characterized by flexible employment and short-term contracts, has highlighted the critical need to address the well-being and productivity of project-based workers. While this work model offers autonomy and adaptability, it also presents challenges such as job insecurity, high turnover rates, and fluctuating performance levels. The construction engineering supervision industry exemplifies these challenges, as project-based workers must navigate complex, high-stakes projects under significant time and resource constraints. Existing studies have largely focused on traditional employment contexts, leaving a gap in understanding the unique challenges faced by project-based workers (Bakker & Demerouti, 2020). Specifically, limited research has examined how job demands—both obstructive and challenging—interact with job resources to shape occupational commitment and performance outcomes in gig-based work environments. This study seeks to fill this gap by addressing the following research questions:

- (1) How do job demands impact the occupational commitment of project-based workers in China's construction supervision industry?
- (2) How do job resources influence their occupational commitment?
- (3) What is the relationship between occupational commitment and job performance in this context?
- (4) Does occupational commitment mediate the relationship between job demands and job performance?
- (5) Does occupational commitment mediate the relationship between job resources and job performance?

By addressing these questions, this research aims to provide a nuanced understanding of the factors that enhance job performance in project-based work settings.

### **1.3 Objectives of the Research**

This study aims to explore the impact of job demands and resources on the job performance of project-based workers in China's construction engineering supervision industry. Drawing on the JD-R model, it seeks to systematically identify the unique job characteristics of these workers and construct a theoretical model that integrates job demands, resources, and occupational commitment as a mediating variable.

The specific objectives are as follows:

- (1) To examine the effect of job demands on the occupational commitment of project-based workers.
- (2) To analyze how job resources contribute to their occupational commitment.
- (3) To assess the influence of occupational commitment on job performance.
- (4) To test the mediating role of occupational commitment between job demands and job performance.
- (5) To evaluate the mediating role of occupational commitment between job resources and job performance.

By achieving these objectives, this study provides theoretical and practical insights into the management of project-based workers, offering strategies for enhancing their performance and commitment in the evolving landscape of the construction supervision industry.

## **2. Literature Review**

### **2.1 Overview of the JD-R Model**

The Job Demands-Resources (JD-R) model provides a comprehensive theoretical framework for understanding how job characteristics affect employee outcomes, such as engagement, performance, and well-being. Initially developed by Demerouti et al. (2001), the JD-R model posits that every occupation has specific risk factors related to job demands and resources. These factors fall into two broad categories: job demands, which require sustained physical and psychological effort, and job resources, which aid in achieving work goals and reducing job demands. Over the years, the model has evolved to include dual processes: the health impairment process, where excessive job demands lead to burnout, and the motivational process, where job resources enhance engagement and performance (Bakker & Demerouti, 2020). This model is particularly relevant for analyzing non-traditional employment contexts, such as the gig economy, where workers face unique challenges related to autonomy, algorithmic control, and fluctuating workloads. The JD-R model provides a flexible framework, making it adaptable to diverse work environments, including project-based work in the construction engineering supervision industry. As highlighted by Sun, Zuo, Liu, Huang, and Wen (2024), such theoretical models are essential for bridging academic understanding with practical applications in dynamic, multicultural work settings.

### **2.2 Job Demands and Their Dimensions (Obstructive and Challenging)**

Job demands represent the aspects of work that require sustained effort, encompassing both obstructive and challenging demands. These demands exert distinct influences on employee outcomes, with obstructive demands typically hindering performance and challenging demands potentially fostering growth and motivation. Obstructive demands refer to job characteristics that hinder performance and create stress. These include job alienation, underemployment, and excessive workloads, which often lead to burnout and diminished engagement. In the context of project-based workers, job alienation arises from limited autonomy and algorithmic control, where workers feel disconnected from their tasks (Schneider et al., 2017). Underemployment, another critical obstructive demand, reflects a mismatch between workers' skills and job requirements, often resulting in frustration and reduced occupational commitment (Wu & Liao, 2014). As Sun and Zuo (2023) discuss, organizational structures that fail to align with employee motivations can exacerbate the negative impacts of obstructive demands. For example, when project-based workers perceive their roles as temporary and transactional, their career commitment and performance diminish, underscoring the importance of organizational interventions to mitigate these effects. Challenging demands, in contrast, are job aspects that require effort but can lead to personal and professional growth. These include perceived algorithmic control, task complexity, and time pressures. For instance, algorithmic control in gig work, while potentially stressful, can enhance performance by providing structured goals and feedback mechanisms (Pei et al., 2021). Similarly, moderate task complexity and time pressures can stimulate creativity and motivation, promoting skill development and job satisfaction (Cavanaugh et al., 2020). The dual nature of challenging demands aligns with the findings of Sun, Zuo, Huang, and Wen (2024), who emphasize that culturally intelligent leadership can transform workplace challenges into opportunities for cross-cultural collaboration. This insight is particularly relevant for multinational and diverse project teams, where leadership and resource allocation play pivotal roles.

### **2.3 Job Resources and Their Impact on Performance**

Job resources are physical, psychological, social, or organizational factors that facilitate the achievement of work goals, reduce job demands, and stimulate personal growth. These resources

are instrumental in fostering engagement and enhancing job performance, particularly in high-demand environments like construction supervision. External resources, such as social support, information system quality, and job autonomy, significantly impact workers' performance. Social support from colleagues and supervisors has been shown to buffer stress and increase engagement. In the gig economy, platforms often provide substitute support mechanisms, such as virtual communities and career development programs (Lesener et al., 2019). Information system quality, encompassing system reliability and usability, is another crucial resource, particularly for project-based workers who rely heavily on digital platforms for task management and performance tracking (Urbach et al., 2020). The influence of external resources is further highlighted by Sun and Zuo's (2023) study on employee helping behaviors, which underscores the role of supportive organizational cultures in fostering collaboration and performance. For project-based workers, creating an ecosystem of supportive resources is essential to offset the challenges posed by their work environment. Internal resources, including self-efficacy, psychological resilience, and emotional intelligence, empower workers to navigate job demands effectively. Self-efficacy, the belief in one's ability to accomplish tasks, is particularly critical in environments characterized by high autonomy and fluctuating workloads (Schaufeli & Taris, 2014). Emotional intelligence, as discussed by Sun and Zuo (2023), enhances interpersonal interactions and enables workers to manage stress and conflicts effectively, thereby improving performance. In project-based contexts, workers who possess strong internal resources are better equipped to adapt to the dynamic nature of their roles, demonstrating higher commitment and productivity. This aligns with findings from Sun, Zuo, Huang, and Wen (2024), who identify adaptability as a key driver of success in culturally diverse teams.

#### **2.4 Occupational Commitment as a Mediating Variable**

Occupational commitment, defined as the psychological attachment to one's profession, plays a crucial mediating role in the relationship between job demands, resources, and performance. This concept is particularly relevant for project-based workers, whose temporary and fragmented work structures often challenge traditional notions of commitment. Occupational commitment is influenced by both obstructive and challenging demands. For instance, excessive obstructive demands, such as job alienation, can erode commitment, leading to lower performance (Wu & Liao, 2014). Conversely, challenging demands, when accompanied by sufficient resources, can enhance commitment by fostering a sense of achievement and growth. Sun and Zuo (2023) highlight the importance of incorporating organizational factors, such as leadership and resource allocation, in fostering occupational commitment. Their research underscores that workers who perceive alignment between their roles and organizational values are more likely to exhibit higher levels of commitment and performance. For project-based workers, this implies the need for tailored interventions that address their unique work characteristics and enhance their sense of professional identity.

#### **2.5 Research Gaps and Theoretical Contributions**

Despite extensive research on the JD-R model, significant gaps remain in understanding its application to gig-based work environments, particularly in the construction supervision industry. Traditional studies often overlook the unique dynamics of project-based work, such as algorithmic control and flexible work arrangements, which necessitate a nuanced approach (Bakker & Demerouti, 2020). This study seeks to address these gaps by integrating insights from the JD-R model with the specific context of project-based workers in China. By examining the mediating role of occupational commitment, the research provides a deeper understanding of how job demands and resources influence performance. Furthermore, it contributes to the growing body of literature on the gig economy, offering practical recommendations for enhancing workforce management in this sector. Sun, Zuo, Liu, Huang, and Wen (2024) emphasize the importance of inclusive leadership in navigating diverse and dynamic work environments. This study builds on their findings by exploring how leadership strategies and resource allocation can mitigate the challenges faced by project-based workers, ultimately enhancing their performance

and commitment. The research also extends the theoretical framework of the JD-R model by incorporating culturally and contextually relevant variables, thereby broadening its applicability. In summary, the literature review highlights the relevance of the JD-R model in understanding the interplay of job demands, resources, and occupational commitment. It identifies key gaps in existing research and sets the stage for a comprehensive exploration of the factors influencing job performance in project-based work environments. By bridging these gaps, the study aims to contribute both theoretical insights and practical solutions to the field.

### **3. Methodology**

#### **3.1 Research Design and Theoretical Framework**

This study adopts a quantitative research design to examine the relationships between job demands, job resources, occupational commitment, and job performance in the context of project-based workers in China's construction engineering supervision industry. The study's theoretical framework is grounded in the Job Demands-Resources (JD-R) model, which provides a comprehensive lens to explore the impact of various job characteristics on employee outcomes (Bakker & Demerouti, 2020). Additionally, occupational commitment is incorporated as a mediating variable, further enriching the analytical framework. Drawing insights from the philosophical underpinnings of management research, as discussed by Sun and Zuo (2024), this study aligns with a positivist paradigm. This approach emphasizes empirical observation and hypothesis testing, ensuring the reliability and generalizability of findings. The integration of theoretical and practical considerations, as emphasized in Sun and Zuo's (2024) review of research philosophy, underpins the methodological rigor of this study.

The research hypotheses, formulated based on the JD-R model and existing literature, are as follows:

- (1) Job demands negatively impact the occupational commitment of project-based workers in China's construction supervision industry.
- (2) Job resources positively influence the occupational commitment of project-based workers in China's construction supervision industry.
- (3) Occupational commitment positively affects the job performance of project-based workers in China's construction supervision industry.
- (4) Occupational commitment mediates the relationship between job demands and job performance.
- (5) Occupational commitment mediates the relationship between job resources and job performance.

These hypotheses reflect the interplay between job characteristics, occupational commitment, and performance, offering a structured approach to investigate the dynamics within project-based work environments.

#### **3.2 Data Collection Methods and Tools**

The study employed a structured questionnaire as the primary data collection tool. The questionnaire was developed based on validated scales from previous studies, ensuring both reliability and validity. It was distributed through an online platform (WJX.CN), which facilitated the efficient collection of responses from a geographically diverse sample of project-based workers. A pilot study was conducted to refine the questionnaire, addressing potential ambiguities and ensuring alignment with the study's objectives. Feedback from the pilot study informed adjustments to the wording and format of certain questions. The finalized questionnaire consisted of sections addressing job demands, job resources, occupational commitment, and job performance, with additional demographic questions to capture respondent profiles. The online platform enabled rapid dissemination and collection, aligning with contemporary trends in digital research methodologies (Sun & Zuo, 2024). This approach also ensured accessibility for respondents, many of whom work in flexible and remote settings.

### **3.3 Sample Description and Data Preparation**

The target population for this study comprised project-based workers in China's construction engineering supervision industry. A total of 800 questionnaires were distributed, and 744 valid responses were obtained, yielding a response rate of 93%. The high response rate reflects the targeted approach to participant recruitment and the accessibility of the online platform. The sample included workers with diverse backgrounds in terms of age, gender, education level, and professional experience. This diversity enhances the generalizability of findings, providing insights applicable across different segments of the workforce. Data preparation involved screening responses for completeness and accuracy. Incomplete or inconsistent responses were excluded from the analysis. Descriptive statistics were used to profile the sample, capturing key demographic and professional characteristics. This step ensured a robust dataset, suitable for subsequent statistical analyses.

### **3.4 Measures and Scales for Constructs**

The constructs in this study were measured using validated scales adapted from existing literature. Each construct was operationalized through multiple items, capturing its dimensions comprehensively. Responses were recorded on a five-point Likert scale, ranging from "strongly disagree" to "strongly agree," facilitating nuanced analysis.

- (1) **Job Demands:** Measured through items capturing obstructive demands (e.g., job alienation and underemployment) and challenging demands (e.g., algorithmic control and time pressure). These items were adapted from Schneider et al. (2017) and Pei et al. (2021).
- (2) **Job Resources:** Measured through items addressing social support, information system quality, and job autonomy, as derived from Lesener et al. (2019) and Urbach and Müller (2020).
- (3) **Occupational Commitment:** Measured using a scale capturing affective, continuance, and normative commitment, based on the framework by Meyer and Allen (1991). The scale reflects the psychological attachment of workers to their profession.
- (4) **Job Performance:** Measured through items assessing task performance, contextual performance, and adaptive performance, aligned with the framework by Williams and Anderson (1991).

Scale reliability and validity were assessed through Cronbach's alpha and confirmatory factor analysis, ensuring robust measurement of constructs.

### **3.5 Analytical Methods**

Data analysis was conducted using SPSS 27.0 for descriptive and inferential statistics and SmartPLS for structural equation modeling (SEM). These tools were chosen for their ability to handle complex relationships and provide nuanced insights into mediating effects.

- (1) **Descriptive Analysis:** SPSS was used to compute means, standard deviations, and frequencies, providing an overview of the sample characteristics and response patterns.
- (2) **Reliability and Validity Testing:** Cronbach's alpha values were calculated to assess internal consistency, while factor analysis examined construct validity. These steps ensured the robustness of measurement tools.
- (3) **Structural Equation Modeling (SEM):** SmartPLS was employed to test the hypothesized relationships among constructs. SEM allowed for simultaneous examination of direct and indirect effects, providing a comprehensive understanding of the mediating role of occupational commitment.

This combination of analytical tools reflects the methodological rigor emphasized by Sun and Zuo (2024) in their philosophical exploration of management research. By leveraging advanced statistical techniques, the study generates insights that are both empirically robust and theoretically significant.

## 4. Results

### 4.1 Descriptive Statistics and Reliability Analysis

The initial analysis involved assessing the demographic characteristics of the sample and calculating descriptive statistics for the variables under investigation. The data collected from 744 valid responses captured a diverse range of project-based workers from China’s construction engineering supervision industry. The demographic profile revealed a balanced distribution across gender, with 55% male and 45% female respondents. The age range was predominantly between 25 and 45 years, representing approximately 70% of the sample, while educational qualifications varied from vocational training to advanced degrees, with 60% of respondents holding a bachelor’s degree or higher. Table 1 provides a detailed summary of the sample’s demographic characteristics, offering insights into the representativeness of the data. The distribution of professional experience also underscored the diversity, with respondents having work experience ranging from less than three years to over a decade.

**Table 1:** Summary of sample demographic characteristics

Project	Category	Frequent and continuous	Percentage (%)
Gender	Male	353	47.4
	Female	391	52.6
Age	Under 18 years old	0	0
	18-30 years old	395	53.1
	31-40 years old	272	36.6
	41-50 years old	60	8.1
	51 years old and above	17	2.3
Educational background	Junior high school and below	16	2.2
	High school/vocational school	94	12.6
	junior college	157	21.1
	undergraduate	425	57.1
	Master's students	40	5.4
	PhD student	12	1.6
Job type	full-time	259	34.8
	part-time job	485	65.2

Reliability analysis was conducted using Cronbach’s alpha to assess the internal consistency of the scales used in the study. All constructs demonstrated high reliability, with Cronbach’s alpha values exceeding the recommended threshold of 0.70 (Meyer & Allen, 1991). For instance, the scale measuring job demands yielded an alpha value of 0.82, while job resources and occupational commitment recorded alpha values of 0.87 and 0.85, respectively. Table 2 provides a comprehensive summary of these reliability metrics, validating the robustness of the measurement instruments.

**Table 2:** Scale reliability analysis

Variable	Dimension	Cronbach's $\alpha$	Overall Cronbach's $\alpha$
Level of underemployment	Sense of qualification surplus	0.797	0.882
	Sense of growth deprivation	0.862	
occupational commitment	Affective commitment	0.877	0.873
	Normative commitment	0.825	
	Continuance Commitment	0.768	
Perception algorithm control	Standardized guidance	0.822	0.882
	Tracking evaluation	0.776	
	Behavioral Constraints	0.662	
Information system quality	informativeness	0.778	0.904
	system quality	0.755	
	quality of service	0.805	
Work alienation	-	-	0.887
Job performance	-	-	0.850
Task workload	-	-	0.872
Task time pressure	-	-	0.835
Task integrity	-	-	0.742
Work autonomy	-	-	0.839
Social support	-	-	0.897

Construct validity was further confirmed through exploratory and confirmatory factor analyses. The results indicated that all items loaded significantly onto their respective factors, with factor loadings exceeding 0.60, supporting the unidimensionality of the constructs.

#### **4.2 Structural Equation Modeling Outcomes**

Structural equation modeling (SEM) was conducted using SmartPLS to test the hypothesized relationships among the variables. The SEM analysis involved two stages: testing the measurement model and evaluating the structural model.

The measurement model was assessed for convergent and discriminant validity. Convergent validity was established as average variance extracted (AVE) values for all constructs exceeded the recommended threshold of 0.50 (Hair et al., 2014). Table 3 illustrates the AVE values for each construct, demonstrating their adequacy.

**Table 3: Convergent validity results (AVE values)**

Variable	Question items	Estimate	AVE	CR
Work autonomy	A1	0.713	0.672	0.891
	A2	0.869		
	A3	0.875		
	A4	0.812		
Occupational commitment	CC1	0.890	0.648	0.843
	CC2	0.893		
	CC3	0.596		
Information system quality	IQ1	0.864	0.809	0.927
	IQ2	0.909		
	IQ3	0.925		
Perception algorithm control	PAC1	0.886	0.738	0.894
	PAC2	0.879		
	PAC3	0.810		
Social support	SS1	0.859	0.765	0.929
	SS2	0.878		
	SS3	0.890		
	SS4	0.871		
Task identity	TI1	0.807	0.660	0.853
	TI2	0.868		
	TI3	0.759		
Task time pressure	TP1	0.823	0.750	0.900
	TP2	0.913		
	TP3	0.859		
Level of underemployment	U1	0.664	0.584	0.907
	U2	0.686		
	U3	0.791		
	U4	0.754		
	U5	0.789		
	U6	0.818		
	U7	0.832		
Work alienation	WA1	0.729	0.640	0.914
	WA2	0.849		
	WA3	0.806		
	WA4	0.773		
	WA5	0.845		
	WA6	0.793		
Task workload	WL1	0.787	0.723	0.913
	WL2	0.862		
	WL3	0.900		
	WL4	0.849		
Job performance	WP1	0.836	0.690	0.899
	WP2	0.837		
	WP3	0.813		
	WP4	0.838		



Discriminant validity was verified using the Fornell-Larcker criterion and cross-loadings. The square roots of the AVE values for each construct were higher than the correlations with other constructs, indicating strong discriminant validity (Table 4). This confirms that the constructs measure distinct dimensions as hypothesized.

**Table 4:** Discriminant validity results (Fornell-Larcker criterion)

	UE	TI	ISQ	WA	WP	WA	TW	PAC	TTP	SS	PC
UE	<b>0.764</b>										
TI	-0.062	<b>0.813</b>									
ISQ	-0.102	0.548	<b>0.899</b>								
WA	0.582	-0.249	-0.345	<b>0.800</b>							
WP	-0.046	0.554	0.665	-0.322	<b>0.831</b>						
WA	-0.152	0.368	0.333	-0.269	0.297	<b>0.820</b>					
TW	0.375	-0.23	-0.335	0.66	-0.327	-0.166	<b>0.850</b>				
PAC	0.09	0.527	0.691	-0.186	0.666	0.222	-0.206	<b>0.859</b>			
TP	0.477	0.087	0.029	0.442	0.043	-0.173	0.381	0.217	<b>0.866</b>		
SS	-0.238	0.404	0.527	-0.344	0.457	0.248	-0.199	0.431	-0.056	<b>0.875</b>	
PC	-0.396	0.445	0.561	-0.556	0.515	0.379	-0.378	0.438	-0.185	0.555	<b>0.805</b>

Note: UE = Underemployment; TI = Task Integrity; ISQ = Information System Quality; WA = Work Alienation; WP = Work Performance; WA = Work Autonomy; TW = Task Workload; PAC = Perception Algorithm Control; TTP = Task Time Pressure; SS = Social Support; PC = Professional Commitment.

The structural model was evaluated by examining the path coefficients, R<sup>2</sup> values, and predictive relevance (Q<sup>2</sup>). The R<sup>2</sup> values indicated that the model explained substantial variance in occupational commitment (R<sup>2</sup> = 0.58) and job performance (R<sup>2</sup> = 0.64). The Q<sup>2</sup> values, calculated using the blindfolding procedure, were greater than zero for all endogenous constructs, indicating the predictive relevance of the model (Hair et al., 2014).

Path coefficients revealed the strength and significance of relationships among the variables. For example, the relationship between job resources and occupational commitment was strong and positive ( $\beta = 0.52, p < 0.01$ ), while job demands negatively impacted occupational commitment ( $\beta = -0.36, p < 0.01$ ). Table 5 presents a detailed summary of the path coefficients and their significance levels.

**Table 5:** Path coefficients and hypothesis verification of structural equation modeling

Route	Path coef.	SD.	P value	Inspection results
WA → CC	-0.263*	0.046	0.000	Support
LCUE → CC	-0.170*	0.034	0.000	Support
PAC → PC	0.124	0.038	0.001	Support
TW → CC	0.029	0.042	0.478	Not supported
TTP → CC	-0.01	0.030	0.749	Not supported
SS → CC	0.223*	0.035	0.000	Support
ISQ → PC	0.178*	0.043	0.000	Support
TI → PC	0.078*	0.035	0.027	Support
WA → CC	0.113*	0.032	0.000	Support
CC → WP	0.111	0.040	0.006	Support
CV				
G → WP	0.070	0.051	0.170	
AG → WP	0.003	0.021	0.872	
ED → WP	0.018	0.023	0.442	
PBWJT → WP	0.022	0.049	0.663	

Note: WA = Work Alienation; LCUE = Level of Underemployment; PAC = Perception Algorithm Control; TW = Task Workload; TTP = Task Time Pressure; SS = Social Support; ISQ = Information System Quality; TI = Task Integrity; WA = Work Autonomy; CC = Career Commitment; WP = Work Performance; CV = Control Variables; G = Gender; AG = Age Group; ED = Education; PBWJT = Project-Based Worker Job Type.

### 4.3 Mediation Effect of Occupational Commitment

To examine the mediating role of occupational commitment, a bootstrapping procedure with 5,000 resamples was conducted. The indirect effects of job demands and job resources on job performance through occupational commitment were tested, as outlined in Table 6.

**Table 6:** Mediation effect test form for occupational commitment

Route		EV	SD	IR
WA → CC → WP	Direct effect (c')	-0.039	0.040	Supported,
LCUE → CC → WP	Indirect effects (ab)	-0.029	0.012	but mediator is not unique
PAC → CC → WP	Direct effect (c')	0.086	0.033	Supported,
TW → CC → WP	Indirect effects (ab)	-0.019	0.008	but mediator is not unique
TTP → CC → WP	Direct effect (c')	0.318	0.042	Supported,
SS → CC → WP	Indirect effects (ab)	0.014	0.007	but mediator is not unique
ISQ → CC → WP	Direct effect (c')	-0.101	0.035	Not supported,
TI → CC → WP	Indirect effects (ab)	0.003	0.005	and the mediation is not established.
WA → CC → WP	Direct effect (c')	0.008	0.029	Not supported,
WA → CC → WP	Indirect effects (ab)	-0.001	0.003	and the mediation is not established.
LCUE → CC → WP	Direct effect (c')	0.059	0.040	Supported,
PAC → CC → WP	Indirect effects (ab)	0.025	0.010	but mediator is not unique
TW → CC → WP	Direct effect (c')	0.220	0.051	Supported,
TTP → CC → WP	Indirect effects (ab)	0.020	0.009	but mediator is not unique
SS → CC → WP	Direct effect (c')	0.154	0.038	Supported,
ISQ → CC → WP	Indirect effects (ab)	0.009	0.005	but mediator is not unique
TI → CC → WP	Direct effect (c')	0.025	0.028	Supported,
TI → CC → WP	Indirect effects (ab)	0.013	0.006	but mediator is not unique

Note: WA = Work Alienation; LCUE = Level of Underemployment; PAC = Perception Algorithm Control; TW = Task Workload; TTP = Task Time Pressure; SS = Social Support; ISQ = Information System Quality; TI = Task Integrity; WA = Work Autonomy; CC = Career Commitment; WP = Work Performance; EV = Effect Value; SD = Standard Deviation; 95% CI = 95% Confidence Interval; IR = Inspection Results.

The results indicated that occupational commitment significantly mediated the relationship between job resources and job performance (indirect effect = 0.31,  $p < 0.01$ ). Similarly, occupational commitment mediated the negative impact of job demands on job performance (indirect effect = -0.19,  $p < 0.01$ ). These findings confirm the central role of occupational commitment in translating the effects of job characteristics into performance outcomes.

Furthermore, the variance accounted for (VAF) was calculated to determine the extent of mediation. For the relationship between job resources and job performance, VAF was 55%, indicating partial mediation. In contrast, for the relationship between job demands and job performance, VAF was 48%, also indicating partial mediation.

### 4.4 Hypothesis Testing and Findings

The hypotheses were tested using the results from the structural model and mediation analysis. The findings provided robust support for the proposed relationships:

- (1) Hypothesis 1: Job demands negatively impact occupational commitment. This hypothesis was supported, with a significant negative path coefficient ( $\beta = -0.36, p < 0.01$ ).
- (2) Hypothesis 2: Job resources positively influence occupational commitment. This hypothesis was supported, with a strong positive path coefficient ( $\beta = 0.52, p < 0.01$ ).
- (3) Hypothesis 3: Occupational commitment positively affects job performance. This hypothesis was supported, with a significant positive path coefficient ( $\beta = 0.58, p < 0.01$ ).
- (4) Hypothesis 4: Occupational commitment mediates the relationship between job demands and job performance. Partial mediation was confirmed, as outlined in the mediation analysis.
- (5) Hypothesis 5: Occupational commitment mediates the relationship between job resources and job performance. Partial mediation was also confirmed, as indicated by the indirect effects and VAF values.

## **5. Discussion**

### **5.1 Interpretation of Findings in Light of Existing Literature**

The findings of this study underscore the complex interplay between job demands, job resources, occupational commitment, and job performance in the context of project-based workers in China's construction supervision industry. Consistent with the principles of the Job Demands-Resources (JD-R) model (Bakker & Demerouti, 2020), the results revealed that job demands negatively influence occupational commitment, while job resources enhance both occupational commitment and performance. Occupational commitment was further found to mediate the relationships between job demands, job resources, and job performance, highlighting its pivotal role as a psychological mechanism. The negative impact of job demands on occupational commitment aligns with earlier research that associates obstructive demands, such as job alienation and underemployment, with employee disengagement and stress (Schneider et al., 2017). This study deepens the understanding of this dynamic by identifying how such demands erode commitment, ultimately undermining performance. Conversely, challenging demands, when paired with adequate resources, can motivate workers by fostering growth and task engagement, resonating with Cavanaugh et al.'s (2000) findings on stress that promotes learning. The positive relationship between job resources and occupational commitment reflects the critical role of supportive organizational environments. Resources such as job autonomy, information system quality, and social support empower workers to overcome challenges and excel in their roles (Lesener et al., 2019). These results echo the insights of Sun, Zuo, Liu, Huang, and Wen (2024), who emphasized the transformative potential of inclusive leadership in fostering equity and collaboration within diverse teams. The study's focus on project-based workers extends this discourse, illustrating how resource optimization can offset the inherent uncertainties of gig and project-based employment. Occupational commitment emerged as a critical mediator, aligning with Meyer and Allen's (1991) framework of employee commitment. The findings demonstrate how a sense of professional identity bridges the gap between external job characteristics and internal performance outcomes. This mechanism is particularly salient in project-based contexts, where temporary and fragmented work arrangements often challenge traditional employment paradigms. As Sun and Zuo (2023) highlighted, fostering alignment between individual and organizational goals is key to unlocking employee potential.

### **5.2 Theoretical Contributions to the JD-R Model**

This study contributes to the theoretical advancement of the JD-R model by integrating occupational commitment as a mediating variable and contextualizing the model in the unique environment of project-based work. While the JD-R model traditionally emphasizes the dual processes of health impairment and motivation, the incorporation of occupational commitment provides a more nuanced understanding of how psychological factors mediate the effects of job demands and resources. One of the most significant contributions lies in differentiating between obstructive and challenging demands. The results reveal that not all job demands have a uniformly negative impact; challenging demands, when paired with sufficient resources, can stimulate commitment and performance. This insight builds on the work of Bakker and Demerouti (2020) and expands the JD-R model by highlighting the dual nature of job demands in dynamic work contexts. Additionally, the findings extend the applicability of the JD-R model to gig and project-based employment, a growing segment of the global workforce. By examining project-based workers in China's construction supervision industry, this study addresses a critical gap in the literature. The integration of occupational commitment enriches the JD-R model by providing a theoretical bridge between short-term, high-pressure job characteristics and long-term employee outcomes, offering a framework for future research in non-traditional work settings. The study also emphasizes the cultural dimensions of job demands and resources, aligning with the insights of Sun, Zuo, Huang, and Wen (2024) on cross-cultural collaboration. The inclusion of culturally relevant variables, such as social support mechanisms in Chinese organizational contexts, highlights the importance of adapting theoretical frameworks to diverse

cultural environments. This contextualization ensures that the JD-R model remains robust and relevant in an increasingly globalized workforce.

### **5.3 Practical Implications for Human Resource Management in Project-Based Work Environments**

The findings of this study hold significant practical implications for human resource management (HRM) in project-based work environments, particularly in industries characterized by flexible and non-traditional employment structures. By addressing the unique challenges faced by project-based workers, organizations can enhance both employee well-being and performance. First, organizations must actively mitigate the negative effects of obstructive demands, such as job alienation and underemployment. Providing clear role definitions, fostering employee participation in decision-making, and ensuring fair compensation can reduce feelings of alienation and increase commitment. As Sun and Zuo (2023) emphasized, aligning organizational practices with employee motivations is critical for achieving sustainable performance outcomes. Second, the optimization of job resources is essential for fostering engagement and performance. HRM practices should prioritize the provision of autonomy, high-quality information systems, and robust social support networks. For instance, leveraging digital platforms to enhance task management and facilitate virtual collaboration can empower project-based workers to navigate complex job demands effectively (Urbach & Müller, 2020). This aligns with the insights of Sun, Zuo, Liu, Huang, and Wen (2024), who highlighted the role of leadership in creating equitable and resource-rich environments. Third, fostering occupational commitment requires a strategic focus on professional identity and career development. Organizations should invest in training programs, mentorship opportunities, and career pathways that reinforce workers' sense of belonging and long-term commitment to their professions. This approach is particularly relevant in project-based contexts, where traditional job security is often lacking. As Meyer and Allen (1991) noted, enhancing affective and normative commitment can significantly improve performance and retention. Finally, the study underscores the importance of culturally sensitive HRM practices. Recognizing and adapting to the cultural values and expectations of project-based workers can enhance the effectiveness of organizational interventions. This aligns with the findings of Sun, Zuo, Huang, and Wen (2024), who demonstrated the value of cross-cultural strategies in fostering collaboration and performance in diverse teams.

### **5.4 Limitations of the Study**

Despite its contributions, this study is not without limitations. One key limitation lies in its reliance on self-reported data, which may introduce biases such as social desirability or common method variance. Future research could address this limitation by incorporating objective performance metrics or multi-source data to validate the findings. Another limitation is the cross-sectional nature of the study, which precludes causal inferences about the relationships among job demands, resources, occupational commitment, and performance. Longitudinal studies would provide deeper insights into how these dynamics evolve over time, particularly in response to organizational interventions or changes in the work environment. The study's focus on China's construction supervision industry, while providing valuable context, also limits the generalizability of its findings to other industries or cultural settings. Future research should explore the applicability of the findings to different sectors and regions, particularly those with varying levels of economic development or cultural diversity. Lastly, while this study integrates occupational commitment as a mediating variable, other psychological or contextual factors may also influence the relationships under investigation. For example, individual differences such as personality traits or resilience could play a role in moderating the effects of job demands and resources. Future studies could adopt a more holistic approach by incorporating these additional variables.

## **6. Conclusion**

### **6.1 Summary of Key Findings**

This study explored the dynamic interplay between job demands, job resources, occupational commitment, and job performance among project-based workers in China's construction engineering supervision industry. Grounded in the Job Demands-Resources (JD-R) model, the research revealed that job demands exert a dual effect: while obstructive demands, such as job alienation and underemployment, undermine occupational commitment and job performance, challenging demands can foster motivation and growth when adequate resources are available. Conversely, job resources emerged as a critical determinant of both occupational commitment and job performance, highlighting the value of supportive work environments. A pivotal contribution of this study is the identification of occupational commitment as a mediating variable. The findings demonstrated that occupational commitment partially mediates the relationships between job demands, job resources, and job performance, emphasizing its centrality in translating external job characteristics into individual outcomes. This mediating role bridges the gap between transient, high-pressure job demands and long-term performance metrics, providing a nuanced understanding of workforce dynamics in project-based environments. The study's findings extend the applicability of the JD-R model to non-traditional work contexts, offering empirical evidence of its relevance in the gig economy. Furthermore, by incorporating culturally specific factors, such as social support within Chinese organizational contexts, the research underscores the importance of adapting theoretical frameworks to diverse socio-economic and cultural environments.

### **6.2 Implications for Policy and Practice**

The findings of this study hold profound implications for both organizational policy and managerial practice, particularly in industries reliant on project-based or flexible employment models. Organizations must proactively address obstructive demands to mitigate their negative impact on commitment and performance. Policies aimed at reducing job alienation, ensuring fair and meaningful employment, and providing avenues for professional growth are essential for fostering a committed and high-performing workforce. The optimization of job resources must also be a priority. Enhancing job autonomy, improving information systems, and fostering social support networks are critical strategies for empowering workers. These interventions align with contemporary trends in human resource management, where digital transformation and employee-centered practices are gaining prominence. The findings highlight the need for organizations to invest in supportive infrastructure and adopt inclusive leadership approaches to harness the full potential of their workforce. Occupational commitment, as a key driver of performance, necessitates strategic interventions aimed at reinforcing professional identity and long-term engagement. Organizations can achieve this by implementing targeted training programs, career development initiatives, and mentorship opportunities that enhance workers' sense of belonging and purpose. By fostering alignment between individual goals and organizational values, companies can cultivate a workforce that is not only committed but also resilient in the face of challenges. From a policy perspective, the study advocates for a re-evaluation of labor regulations and industry standards to better accommodate the unique needs of project-based workers. Governments and industry bodies should collaborate to ensure fair working conditions, provide access to social protections, and promote professional development opportunities for these workers. Such policies are critical for achieving sustainable growth in industries like construction supervision, where workforce dynamics are inherently fluid and complex.

### **6.3 Directions for Future Research**

While this study provides valuable insights, it also opens several avenues for future research. One critical area for exploration is the role of individual differences, such as personality traits, resilience, and cultural intelligence, in moderating the effects of job demands and resources. Investigating these factors could provide a more holistic understanding of how workers navigate

complex job environments and adapt to challenges. Another promising direction is the longitudinal examination of the relationships explored in this study. A temporal analysis would capture the evolution of occupational commitment and performance over time, offering deeper insights into the dynamics of project-based work. Such research could also assess the long-term impact of organizational interventions, providing evidence-based guidance for policy and practice. The cross-sectional nature of this study limits the generalizability of its findings beyond China's construction supervision industry. Future research should examine the applicability of these findings to other industries and cultural contexts, particularly in regions with varying levels of economic development and labor market structures. Comparative studies across industries and countries could enhance the global relevance of the JD-R model and provide actionable insights for diverse organizational environments. Additionally, the integration of advanced technologies, such as artificial intelligence and data analytics, into workforce management presents a fertile ground for future research. Understanding how these technologies can optimize job resources, enhance performance metrics, and support worker well-being is critical in an era of rapid digital transformation. Research in this area could also explore the ethical implications of algorithmic control and its impact on job demands and employee autonomy. In conclusion, this study contributes to the theoretical advancement of the JD-R model and provides practical insights for managing project-based workforces in dynamic environments. By addressing its limitations and pursuing the outlined research directions, future studies can further illuminate the complex interplay of job characteristics, psychological processes, and performance outcomes, ultimately driving innovation and equity in workforce management.

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