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EXPLORING WORKFORCE SUSTAINABILITY: DIVERSITY, COMMUNITY, AND CONNECTIVITY AS KEY FACTORS IN JOB SATISFACTION AND RETENTION IN THE U.S. CONSTRUCTION INDUSTRY

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ABSTRACT

The construction industry is characterized by its dynamic and cyclical nature, leading to high employee turnover rates. Data shows increasing turnover among fieldworkers and a significant shortage of skilled laborers across various job classifications, making the recruitment and retention of young skilled workers a critical concern. To address this gap, the authors assess the importance of key workforce sustainability (WS)—diversity, community, and connectivity—and their impact on job satisfaction, and attrition intentions among Latino/Hispanics, Black or African Americans, and Caucasian construction workers. This study conducted an exploratory survey involving 95 participants in the US. Correlation analysis was used to determine the relationship between WS attributes, job satisfaction, and attrition intention. By evaluating these attributes and their relationship, this study provides useful insight regarding potential strategies for sustaining the construction workforce.

KEYWORDS:

Workforce Sustainability; Diversity; Community; Job Satisfaction; Retention.

INTRODUCTION

The construction industry contributed about \$ 1.1 trillion representing 4% of gross domestic product (GDP) to the US economy in 2023 (*Bureau of Economic Analysis, 2024*). Despite the tremendous contribution of the sector, workforce sustainability continues to be a major concern (*Gambatese et al., 2019*). This industry is labor-intensive and relies heavily on human labor to successfully complete its projects (*Ling et al., 2018*). The construction work environment, however, is both mentally and physically strenuous. These demanding settings can pose various risks to the construction workforce including emotional, physical, and financial difficulties (*Karakhan et al., 2020*). The negative effect of these stresses contributes to high turnover rates, diminished safety performance, and labor shortages (*Karakhan et al., 2020*). The average turnover rate across all industries is estimated to be around 21-22% of the annual salary to recruit and retrain for a vacant position (*Goplerud et al., 2017*). The employee turnover rate in the construction industry is quite high compared to other sectors. The average turnover rate in the construction industry hovers around 21.4%, with employees aged 24 or younger reaching about 64% of turnover. The Associated General Contractors (AGC) of America study found that 89% of contractors have trouble finding workers to hire, 61% delayed project schedules due to workforce shortages, and 90% hope to hire new workers in 2022 (AGC, 2024). There is a need to sustain the workforce in the construction sector.

According to *Xue et al. (2022)* many former employees of various companies departed from their positions because they struggled to cope with the pressure associated with their jobs. Meanwhile, (*Gambatese et al., 2019*) suggests that extreme workplace conditions in the construction industry impact workforce sustainability. Workers, however, are expressing intent to leave or take early retirement due to unsatisfactory working conditions (*Sun & Wang, 2017*). High labor turnover often negatively impacts organizations. The cost of replacing employees, combined with the loss of knowledge and skills when workers depart, can undermine a firm's competitive edge in its industry (*Jafari et al., 2019*). Recently, the impact of employee turnover on productivity has become a significant concern in the construction sector across various countries (*Kissi et al., 2023*). However, the global labor supply is facing challenges in meeting the growing demand for construction services (*Gutu et al., 2023*).

Workforce sustainability includes maintaining a productive and satisfied worker within a supportive work environment (*Van Der Lippe & Lippényi, 2019*). While according to *Gambatese et al. (2019)*, work sustainability is characterized by the degree to which the workforce can effectively perform its intended functions within a period of time. *Kossek & Kossek (2019)* suggested that a sustainable workforce can be developed and maintained through employment practices that integrate work-life balance and well-being with the work experiences of employees throughout their careers. This approach helps employees excel consistently while also flourishing in their personal and family lives. Achieving workforce sustainability involves establishing an environment that fosters motivated, healthy, and highly skilled individuals. It also requires ongoing efforts to nurture and sustain the necessary skills and competencies through various strategies, including training, incentives, and career development programs. The need to sustain the workforce compels the industry to explore the fundamental factors driving employee commitment in order to retain top talent (*Murray & Holmes, 2021*).

There is a critical need to enhance workforce sustainability in the construction sector (*Gambatese et al., 2019*). Employee intention to leave the job is a primary concern due to its significant

financial impact on organizations (Sun & Wang, 2017). The departure of an employee might result in costs for the organization that reaches up to 200% of the employee's yearly salary, covering expenses for recruiting, hiring, and training a new employee (Reina et al., 2018). Workforce sustainability is a fundamental concept that has received relatively little attention in the literature (Jafari et al., 2019; Karakhan et al., 2021). Current studies including Karakhan et al. (2020) focused on developing tools for workforce sustainability. Gutu et al. (2023) assessed workforce sustainability through digitization and leadership. Ling et al. (2018) investigated human resources management practices to improve project managers' job satisfaction. Ali et al. (Karakhan et al., 2021) were concerned about fostering diversity, equity, and inclusion among construction workers. Although numerous studies focused on workforce sustainability (Karakhan et al., 2020; Sing et al., 2017; Karakhan et al., 2023; Karakhan et al., 2021; Jafari et al., 2019), none of these studies explored the relationship between job satisfaction, attrition intentions, and sustainable workforce attributes among the construction workforce. Thus, there is limited research specifically examining the relationship between diversity, community, connectivity, job satisfaction, and attrition intentions within the construction industry across different ethnic groups.

To address the research gap presented above, this study aims to evaluate the relationship between key WS attributes, job satisfaction, and attrition intention. To achieve this goal, the research team set two objectives:

1. Evaluate the importance of diversity, community, and connectivity to construction workers.
2. Evaluate the relationship between these workforce WS attributes in fieldworkers' job satisfaction and attrition intention.

LITERATURE REVIEW

WORKFORCE SUSTAINABILITY

Table 1 presents the workforce attributes adopted for this study. Workforce sustainability reflects the degree to which workforce members feel integrated into a work environment that is nurturing, diverse, equitable, safe, connected, valued, and mature (Karakhan et al., 2020). The level of sustainability in a workforce can range from high to low, influenced by factors such as the education and training received, as well as the qualities and skills developed, like maturity and competence. A workforce may be capable of self-sustenance or might require external resources to maintain its operational capabilities and fulfill its intended roles. For this study, the workforce includes all members of a construction-related organization, encompassing roles from laborers to engineers, supervisors, and managers, who participate directly or indirectly in the construction process (Karakhan et al., 2020) s.

Embracing diversity and inclusion can offer various benefits to organizations, aiding them in attracting talented and proficient employees from diverse ethnic groups globally (Gambatese et al., 2019). A workplace that values diversity and inclusivity fosters community support, career growth, innovation, and overall maturity. Therefore, it is essential for organizations to demonstrate their commitment to fostering and maintaining a diverse and inclusive work environment (Gambatese et al., 2019). Ethnic and racial diversity in the workplace plays a crucial role in enhancing work and team dynamics, as well as promoting a supportive and healthy work environment (Karakhan et al., 2020). The purpose of this indicator is to evaluate the level of ethnic and racial diversity within construction organizations and to motivate these organizations to build

a workforce that reflects the ethnic and racial diversity of the surrounding community (Karakhan et al., 2020).

Despite the advancements in technology and the digital era, research has demonstrated that face-to-face, one-on-one meetings remain the most effective communication method (Gambatese et al., 2019). These meetings foster two-way communication, strengthen relationships between supervisors and team members, and enhance teamwork (Gambatese et al., 2019). To ensure employees are mentally and emotionally connected to their peers, fellow employees, and management, organizing social events for enjoyment and connection is essential. A typical construction project involves various trades, competing priorities, and tight deadlines. Therefore, creating a teamwork environment that encourages and nurtures cooperation, friendship, and loyalty is highly desirable in construction (Karakhan et al., 2020). Teamwork can increase connectivity and engagement within the workforce, improve problem-solving, and motivate employees to perform better. An organization that adopts a teamwork approach should reward employees who exhibit helpful behaviors and support small group sessions and team discussions (Karakhan et al., 2020).

To foster a sense of belonging among employees within the larger community, it's important to emphasize workforce integration within the industry (Gambatese et al., 2019). Promoting such integration can support employee growth and development while building a strong work community at the industry level, ultimately enhancing workforce sustainability across the sector. Creating a local community within the workplace ensures that an organization and its employees are integrated into the broader community surrounding the business (Gambatese et al., 2019). This connection provides support to employees and contributes to business success. Employees tend to be more productive and deliver higher quality services when they serve their own community. Therefore, fostering a local community at work enhances overall workforce sustainability and organizational success (Karakhan et al., 2020).

JOB SATISFACTION

Job satisfaction is an overall measure of employee satisfaction and happiness with their job (Xue et al., 2022). It is influenced by the perceived relationship between what one desires from their job and what one perceives the job as offering (Reina et al., 2018). Satisfaction with job rewards is a crucial aspect of job satisfaction, assessing whether job rewards meet employees' expectations. Satisfaction with HRM practices, which includes incentives, benefits, training, managerial support, and employee engagement, also plays a significant role. Employees' satisfaction with HRM practices is linked to their behavior and intention to stay (Xue et al., 2022). Job satisfaction is affected by multiple factors, including educational preparation for the job, work hours, salary, the work environment, the nature of the work itself, leadership behavior, promotion criteria, interpersonal relationships, job competence, welfare measures, personal recognition, and opportunities for growth (Xue et al., 2022). Enhancing job satisfaction helps retain valuable employees, sustain the company, and reduce turnover rates. Within a project team, when job satisfaction is achieved, team members feel internally connected to the project and are motivated to work hard to ensure its success (Jafari et al., 2019) as shown in Table 1.

ATTRITION INTENTIONS

The factors influencing turnover intentions include perceived lack of effectiveness, inadequate resources, dissatisfaction autonomy (Xue et al., 2022), quality of interpersonal relationships,

opportunities for career advancement, fairness, and flexibility in work schedules (George, 2015). Employees may either exit the workforce entirely or frequently switch to another employer that offers better conditions (Xue et al., 2022). These factors affecting the workforce’s intention to leave a job have been categorized into four groups, namely, job-related factors, external environmental factors, organizational factors, and personal factors of the workforce (Ayodele et al., 2020).

Table 1. Existing Survey Tools Adopted in the Study

Construct	Definition	Sources
Community	Put on social events	(Gambatese et al., 2019)
	Involvement in the local community through charity	
	Encourage workers to stay connected to professional community	
	Workload trade-off between employees	
Diversity	Diverse and inclusive leadership	(Gambatese et al., 2019)
	Diverse and inclusive front-line management	
	Diverse and inclusive workforce (frontline workers)	
	Skilled workforce	
Connectivity	Involves workers in decision-making	(Gambatese et al., 2019)
	Regular meetings between workers and their supervisors	
	Employee stock ownership program	
	Encourage social and fun activities within workdays	
	Implement a teamwork approach	
Attrition	I have considered leaving my job	(Gambatese et al., 2019)
	I am considering leaving my job	
	I am actively looking for other jobs	
	I feel that I could leave my job	
Job satisfaction	Feeling good about one’s job	(Macdonald & MacIntyre, 1997)
	Feeling fairly satisfied with my job	
	I feel secure about my job	
	I believe management is concerned about me	
	Most days I am enthusiastic about my job	
	I definitely like my job	

METHODOLOGY

First, a structured literature review was conducted to support an extensive theoretical investigation needed to define the relationships between the factors under investigation. Second, relying on information extracted from the previous steps, a survey questionnaire was designed and deployed to assess construction fieldworkers’ perception of the importance of workforce sustainable attributes to their job satisfaction and intention to leave the industry. Lastly, a statistical analysis was performed to analyze findings from the survey to better understand and assess the relationship between WS attributes, job satisfaction, and attrition intention.

SURVEY

A questionnaire was employed to gather opinions and personal experiences from construction fieldworkers concerning the importance and relationship among sustainable job resources—

connectivity, community, and diversity—workforce job satisfaction, and attrition intentions previously introduced in Table 1. This method of data collection was chosen because it offers valid and reliable insights into respondents' experiences and understanding of the impact of sustainable resources on their job satisfaction and attrition intentions. The questionnaire, developed by Gambatese et al. (2019) and Macdonald & MacIntyre (1997) and subsequently validated by experts, was adopted with modifications for this study. Responses were captured using a 5-point Likert scale, and the instrument's validity was further confirmed through a pilot study with five academic research experts in the field of workforce sustainability. To evaluate the importance of diversity, community, and connectivity, the survey was designed to assess the perceived importance of these WS attributes among construction workers. Participants were asked to rate these attributes on a 5-point Likert scale, with questions tailored to capture the significance of each attribute in their work environment.

A total of 95 construction industry fieldworkers across three ethnic groups (Caucasians, Latino/Hispanics, and Black or African Americans) participated in the survey. Most respondents were Caucasians (52.6%), followed by Latino/Hispanics (26.35%), then Black or African Americans (21.05%). These ethnic proportions reflect the heterogeneous composition of the construction industry workforce in the United States (Builders, 2024). Where 57.5% of the construction workforce are Caucasians, Latinos/Hispanics constituted to 31.1%, and Black or African Americans sum up to 5.1%, Asian 1.8% while the unknown had 4.1% (Builders, 2024.). This research population therefore mirrored the composition of the workforce in the United States. To avoid bias in the survey, participants were selected from general contractors, subcontractors, and construction management consultants. This selection approach was implemented to ensure high-quality respondents and to obtain credible and balanced feedback. General contractors had 48%, subcontractors 36%, and construction management consultants constituted 16%. The sample size was adequate compared with previous studies; for example, surveys conducted by Vee & Skitmore (2003) and Brown and Loosemore (Brown & Loosemore, 2015) were based on responses from 31 and 23 respondents, respectively.

STATISTICAL ANALYSIS

Reliability analysis was conducted to assess the internal consistency of the scale used for measuring job satisfaction and attrition using Cronbach's alpha estimate of reliability. Using SPSS Statistics 26.0, a reliability analysis was conducted. Cronbach's alpha reliability coefficient of 0.70 is considered sufficient (Navarro-Rivera & Kosmin, 2013). The Cronbach's alpha coefficient exceeded the 0.70 threshold as shown in (Owusu-Manu et al., 2018) Table 2. Therefore, the study can be regarded as sufficiently reliable. Reliability analyses are crucial for ensuring the validity and accuracy of the survey results. Reliability analysis assesses the internal consistency of the scale, ensuring that the measurement is reliable (Ahadzie, 2007)

Table 2. Cronbach's Alpha Reliability Analysis

Group	No. of Items in the group	Average Item-Total Correlation	Cronbach's Alpha
Diversity	4	0.705	0.780
Connectivity	5	0.775	0.875
Community	3	0.925	0.721

One sample t-test was purposely conducted to ascertain the significant level of the workforce sustainable attributes. One Sample t-test is a statistical procedure used to examine the mean difference between a sample and the known population mean. This test helps determine the relative significance of variables (Ross & Wilson, 2017; Owusu-Manu et al., 2018). According to Ross & Wilson (2017), one-sample t-test reports the degrees of freedom (df - approximate sample size), the test value (strength of the test), and the p-value (probability of the test being significant). At a 95% confidence level, with a p-value less than 0.05 and a hypothesized mean (test value) of 3.0, the one-sample t-test was used to assess the significance of workforce sustainability attributes in the study. The sig. (2-tailed) value indicates whether the observed sample mean is significantly different from the hypothesized population mean in either direction. A mean difference provides the actual difference between the sample mean and the hypothesized mean, giving insight into the magnitude of this difference. The 95% confidence interval offers a range within which we can be 95% certain that the true population mean lies, further validating the reliability of the results. If the confidence interval does not include the hypothesized mean, it suggests a significant difference, reinforcing the findings indicated by the p-value (Field & Anxiety, 2013).

Correlation Analysis: The research team also performed correlation analysis to assess the interrelationships among the study variables. Correlation Analysis is a method used to evaluate the strength and direction of the linear relationship between two continuous variables (Field & Anxiety, 2013). In this section of the study, a correlational analysis was carried out to provide an initial understanding of the bivariate relationship between the main constructs of the study. Pearson correlation was employed to generate the correlation results. The rotation matrix was used to remove unnecessary variables from the model for testing the hypothesis. Subsequently, the strength of the relationships between the constructs was evaluated using correlation analysis (Liu et al., 2016). Pearson correlation coefficients were calculated to determine the strength and direction of the relationships between WS attributes, job satisfaction, and attrition intention among the various ethnic groups.

RESULT AND DISCUSSION

IMPORTANCE OF DIVERSITY, COMMUNITY, AND CONNECTIVITY

The one-sample t-test was conducted to assess the importance of each WS attribute. All the attributes had positive t-values (strength of the test), indicative that their means were significantly above the hypothesized mean, as shown in Table 3. These results indicate that community significantly affects workforce sustainability meaning that a strong community within the construction workforce positively influences job satisfaction and retention. With respect to connectivity, the t-test significance infers that effective communication, networking, and supportive relationships within the work environment contribute to a connected workforce. Similarly, results on diversity indicate that having a diverse community is crucial for WS. The

study revealed that all three WS attributes diversity, community, and connectivity were rated as important and highly significant by the respondents.

Table 3. One Sample T-test.

WS	T	df	Test Value = 3.0			
			Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Community	15.072	95	0.000	3.123	3.6613	5.3959
Connectivity	14.446	95	0.000	1.320	1.2839	6.7066
Diversity	11.190	95	0.000	2.240	1.7319	5.4205

Community support is particularly vital for ethnic minorities in the construction industry, suggesting that fostering a strong sense of community can be an effective strategy to enhance job satisfaction and retention. Connectivity, characterized by strong interpersonal relationships and communication is important across the board, its impact on reducing turnover intentions may be more pronounced in certain demographic groups such as **Latinos/Hispanics**. The findings also extend the understanding of diversity's impact, revealing that its effects are not uniform across all ethnic groups.

RELATIONSHIP BETWEEN WORKFORCE SUSTAINABILITY ATTRIBUTES IN FIELDWORKERS' JOB SATISFACTION AND ATTRITION INTENTION ACROSS ETHNIC GROUPS

The Spearman correlation method was employed to examine the correlation among workforce sustainable attributes, job satisfaction, and attrition intentions within Caucasians, Latinos/Hispanics, and Black or African Americans in the U.S construction. The results of the correlation analysis are in Table 4. First, we examined the relationship between Community and Diversity across different ethnic groups and found that Caucasians have a moderate positive correlation (0.593), but this correlation is not statistically significant (p-value = 0.100). Latinos/Hispanics do have a moderate positive correlation (0.541), which is statistically significant (p-value = 0.040). Similarly, Black or African Americans presented a moderate positive correlation (0.606), although it approaches significance (p-value = 0.091).

When evaluating Connectivity in Caucasians, the correlation analysis showed a moderate positive correlation with Diversity (0.643) which is statistically significant (p-value = 0.04), and a weak positive correlation with Community (0.382), not statistically significant (p-value = 0.071). Connectivity in Latinos/Hispanics showed a moderate positive correlation with both Diversity (0.582) and Community (0.382), both statistically significant (p-values = 0.018 and 0.029, respectively). While Connectivity in Black or African Americans showed a moderate positive correlation with both Diversity (0.523) and Community (0.634), with the latter being statistically significant (p-value = 0.04).

When evaluating Job Satisfaction among the different ethnic groups, results indicated that Caucasians had a weak positive correlation with Community (0.560), approaching significance (p-value = 0.055), and no significant correlation with Diversity or Connectivity. On the other hand, Job Satisfaction in Latinos/Hispanics had a strong positive correlation with Community (0.691), which is statistically significant (p-value = 0.048), but a weak and non-significant correlation with

Diversity and Connectivity. Whereas Job Satisfaction in Black or African Americans had a strong positive correlation with Diversity (0.634) and Community (0.564), but these are not statistically significant (p-values = 0.23 and 0.34, respectively).

Attrition Intention in Caucasians was negatively correlated with all other variables, indicating that as these increase, attrition intention decreases. The correlation is strongest with Community (-0.678) but not statistically significant (p-value = 0.340), and it is statistically significant with Diversity (-0.503, p-value = 0.032) and Connectivity (-0.536, p-value = 0.100). Attrition Intention in Latinos/Hispanics was negatively correlated with Diversity (-0.610) and Connectivity (-0.716), both statistically significant (p-values = 0.010 and 0.011, respectively), and has a moderate negative correlation with Job Satisfaction (-0.532), also significant (p-value = 0.024). Attrition Intention in Black or African Americans was negatively correlated with all other variables, with the strongest and statistically significant correlation with Community (-0.533, p-value = 0.025) and Connectivity (-0.566, p-value = 0.043).

Table 4. Correlation Analysis.

Variables		Diversity	Community	Connectivity	Job Satisfaction	Attrition Intention
Caucasians						
Diversity	Pearson's coefficient	1				
	P-value					
Community	Pearson's coefficient	0.593	1			
	P-value	0.100				
Connectivity	Pearson's coefficient	0.643	0.382	1		
	P-value	0.04	0.071			
Job Satisfaction	Pearson's coefficient	0.326	0.560	0.237	1	
	P-value	0.270	0.055	0.046		
Attrition Intention	Pearson's coefficient	-0.503	-0.678	-0.536	-0.418	1
	P-value	0.032	0.340	0.100	0.000	
Latinos/Hispanic						
Diversity	Pearson's coefficient	1				
	P-value					
Community	Pearson's coefficient	0.541	1			
	P-value	0.040				
Connectivity	Pearson's coefficient	0.582	0.382	1		
	P-value	0.018	0.029			
Job Satisfaction	Pearson's coefficient	0.128	0.691	0.219	1	
	P-value	0.00	0.048	0.054		
Attrition Intention	Pearson's coefficient	-0.610	0.421	-0.716	-0.532	1
	p-value	0.010	0.279	0.011	0.024	
Black or African Americans						
Diversity	Pearson's coefficient	1				
	P-value					
Community	Pearson's coefficient	0.606	1			
	P-value	0.091				
Connectivity	Pearson's coefficient	0.523	0.634	1		
	P-value	0.023	0.04			
Job Satisfaction	Pearson's coefficient	0.634	.564	0.657	1	
	P-value	0.23	00.34	0.06		
Attrition Intention	Pearson's coefficient	-0.247	-0.533	-0.566	-0.488	1
	P-value	0.021	0.025	0.043	0.039	

The positive correlation between diversity, community, and connectivity with job satisfaction aligns with findings from Gambatese et al. (2019) and Xue et al. (2022), who emphasized the importance of these attributes in fostering a supportive and productive work environment. However, this study extends this understanding by highlighting the varying impact of these factors across different ethnic groups within the construction industry, which has been less explored in existing literature. For instance, the stronger correlation between community support and job satisfaction among Latino/Hispanic workers may reflect cultural values that prioritize collective well-being, as noted in studies on workforce dynamics in multicultural environments (Kossek & Kossek, 2019). The findings presented in this paper underscore the critical role of community and connectivity in enhancing job satisfaction and reducing attrition, particularly among minority groups. This suggests that targeted efforts to strengthen workplace community and interpersonal connections can be effective strategies for improving workforce sustainability. However, as shown in Table 4, the results also reveal that the impact of diversity on job satisfaction is not uniform across all ethnic groups, indicating that diversity initiatives must be tailored to the specific needs and perceptions of different demographic segments to be truly effective. The results, analyzed through correlation and t-tests, provide a clear indication of the relationship between WS attributes, job satisfaction, and attrition retention.

CONCLUSION

The construction industry, despite its significant contribution to the US economy, faces high employee turnover rates and a shortage of skilled labor. The physically and mentally demanding work environment poses risks, leading to diminished safety performance and labor shortages. The argument presented in this paper emphasizes the need for sustainable workforce practices, including diversity, community, and connectivity. By fostering a supportive environment and addressing attrition intentions, the construction sector can retain top talent and ensure long-term success. To do address this statement, this study presented the results of an exploratory survey of 95 U.S. construction fieldworkers.

Through correlation analysis, the relationships between WS attributes, job satisfaction, and attrition intention were evaluated. Findings indicated that the relationship between WS attributes in construction fieldworkers' job satisfaction and attrition intention across ethnicity area statistically significance. When evaluating Community and Diversity across Latinos/Hispanics, results demonstrate a statistically significant relationship, whereas for Caucasians and Black or African Americans, the significance is less clear. The relationships between Connectivity, Diversity, and in Latinos/Hispanics demonstrate significant correlations in both dimensions, Caucasians show significance only in Connectivity-Diversity, and Black or African Americans exhibit significance in Connectivity-Community.

When evaluating the relationship between job satisfaction and community engagement, Latinos/Hispanics demonstrate a significant positive association, Caucasians and Black or African Americans show mixed results. On the other hand, attrition intention varies across ethnic groups, with different patterns of correlation. The findings indicate that to effectively decrease turnover rates and address the shortage of skilled labor, it is essential to customize strategies to meet the specific needs of each ethnic group. This approach will enhance job satisfaction, lower attrition rates, and contribute to the development of a robust and diverse construction workforce.

This study is limited by its sample size and participation of only three ethnic groups; therefore, results may not fully capture the diversity of the construction workforce. While the study provides valuable insights into the relationships between WS attributes, job satisfaction, and attrition intentions, further research should include a larger population size and a broader range of ethnic groups.

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